

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXVI.—PROGNOSIS IN MIDDLE-EAR

SUPPURATION

MIDDLE-EAR suppuration is met with at all periods of life from earliest infancy to extreme old age. It is responsible not only for an enormous amount of discomfort and suffering, but also for serious disabilities and, in many cases, gives rise to conditions whereby life itself is endangered. It is thus foolish to regard middle-ear suppuration as a trivial ailment, and it was not unusual some years ago, and it is fortunate that in recent years a careful study of the etiology and the natural course of the disease, together with the varieties of treatment and the alterations they have been found to effect, have improved the prognosis immensely in all directions.

In the vast majority of cases the infection reaches the middle ear via the Eustachian tube, although in such things there is reason to believe that the infection is more often blood-borne than in adults. The spread of infection from the pharynx or nasopharynx is usually the sequel of a cold or some more severe infection such as influenza or one of the specific evers. Any unhealthy condition of the nasopharynx, or example adenoids, predisposes to the occurrence, and it has been known to follow plugging of the nasopharynx, or even of the nose after operations, or the entrance of blood or discharges into the Eustachian tube. The entrance of unclean water when diving or swimming under water is also a source of middle-ear suppuration.

Middle-ear suppuration occurs very readily in sucklings and infants as the Eustachian tube is comparatively short, wide, and straight, and in the early months of life the mucous membranes are very prone to infection. That the pharynx is often the site of infection is evident from the frequent association of an enlarged cervical gland and middle-ear suppuration. It is important that small infants should be kept from those suffering from the common cold, as a cold in the head, usually a trivial affair in adults, may be a serious matter in infancy. It would be a counsel of perfection to suggest that all young children suffering from colds should be kept in bed for a day or two, but if it was the rule, not only would the spread of infection be prevented, but the occurrence of middle-ear suppuration would be diminished.

When infection reaches the middle ear and suppuration occurs, the products of inflammation accumulate in the first place in the lower part of the tympanic cavity, the atrium. It will be remembered that the tympanic cavity may be considered as consisting of two parts, the lower or atrium, and the upper or attic. The atrium is a simple four-sided cavity lined by a thin adherent mucosa with very little connective tissue; the Eustachian tube opens into its anterior wall and its external wall is the tympanic membrane or eardrum. The attic, on the other hand, is a complicated cavity, containing the ossicles and their numerous ligamentous connections. These are covered over by folds of mucous membrane which further subdivide the cavity into compartments and which hang down and help to shut off this cavity from the atrium. The posterior part of the attic is directly continuous through the aditus into the mastoid antrum. The external wall is not a thin

The object of after-treatment is to facilitate the discharge from the tympanic cavity through the perforation and to ensure that it is removed from the external auditory meatus and does not lie in a lake against the drum membrane. Efficient after-treatment can therefore influence the prognosis very materially. Many methods of after-treatment are adopted—an effective one is to place a gauze wick right down to the hole in the drum, changing it at frequent intervals, with gentle syringing and the

With rupture of the drum the atrium empties its contents into the external auditory meatus. As free drainage is established resolution of inflammation should occur and the prognosis should be favourable, unless adverse factors are at work, such as a very virulent infecting organism or some lack of resistance on the part of the patient. Old people seem to have a peculiarly low resistance to aural infections.

After-treatment

membrane, as in the atrium, but is formed by the thick bony squama.

When the middle ear becomes infected, the products of suppuration accumulate in the atrium, the Eustachian tube being closed by the congestion of its mucosa and the attic cavity mainly shut off by swelling of the mucous membranous folds of Trösch. As the pressure increases, the wall which offers the least resistance—namely, the external wall which is formed by the tympanic membrane—begins to show signs of the trouble behind it, and the subjective symptoms become correspondingly increased. These symptoms consist chiefly of earache and fever, whilst noises in the head are often complained of and deafness becomes noticeable. The pain may be sudden and sharp and often reaches a point at which it is almost unbearable, making sleep impossible. The temperature is raised and, in children, is often 102° F. and more. The general condition deteriorates rapidly owing to the fever, pain, and sleeplessness. The eardrum shows signs of inflammation and is usually dark red in appearance. The usual landmarks are lost in the general swelling, which is most marked posteriorly and appears to cover the handle of the malleus. A definite bulge of the membrane is seen, most often in the postero-superior quadrant. The light reflex is lost. It should be noted that in very young infants this loss of light reflex may be the only sign in mild cases, and also that bulging of a normal membrane may occur when an infant cries, so that too much reliance should not be placed on this appearance in the very young. In the average case the accumulation of the products of inflammation behind the drum-head causes it to rupture, and this may occur within 24 hours after the appearance of the initial earache, or may be delayed for some days. If the drum is seen before it has ruptured and is bulging it should be incised. It is important that the incision should be carried upwards through the posterior fold and out towards the meatal wall. This will ensure better drainage from the upper compartment and help to prevent the further extension of inflammation. When the drum bursts or is incised there is usually an immediate cessation of pain and a fall in temperature. If the pain stops quickly it is a favourable sign and probably indicates that the suppuration is confined to the atrium as pain due to attic suppuration is much less likely to be relieved at once.

mopping or sucking out of discharge; but I prefer the use of dry insulations of powder, such as 1 per cent. iodine in borie powder, or Dimol, blown into the meatus each day after a thorough cleansing. The mass of dry powder against the drum seems to attract the discharge through the perforation very efficiently and it is quite extraordinary how much discharge the powder can absorb. The powder can be changed once or twice daily. As the discharge diminishes, the congestion of the Eustachian tube subsides and this canal provides a supplementary drain for the escape of fluid from the middle ear. The prognosis with regard to ultimate recovery is good and the drum heals without an apparent scar. The outlook as regards the hearing is difficult to foretell, but is usually good, except in some of those cases in which healing of the drum is, for some reason, unduly delayed.

COMPLICATIONS

If the discharge persists for more than three weeks one may assume that the inflammation is no longer limited but has spread to the attic and, in all probability, to the mastoid antrum as well. It may be that the infection of the attic was a primary one, as in some cases the infection seems to pass through the attic and infect the attic or even the mastoid antrum from the beginning. Be that as it may, the prognosis is now altered for the worse. We have seen that the lining mucosa of the attic hangs in folds across the cavity and this vascular connective tissue forms a suitable medium for the growth of organisms. Moreover, the opening of the attic is comparatively large and any pus which is formed may take the line of least resistance and pass backwards into the mastoid antrum. This involvement of the mastoid occurs in about 25 per cent. of all cases of acute middle-ear suppuration and as this is dangerous, not only on account of the likelihood of chronic suppuration after the acute stage is passed, with damage to the hearing, it is most important that it should be recognised at the first possible moment. It will be remembered that, developmentally, the mastoid antrum is merely a backward extension from the upper part of the tympanic cavity and is present before any mastoid process or cells appear. It is not unusual for some tenderness over the antrum to be present in moderately severe cases of middle-ear suppuration and this usually disappears if the drainage from the middle ear is freely provided for, but if it persists the implication is that the mastoid cells themselves have become infected, the prognosis is not so good, and the mastoid will require opening. Again, reappearance of the discharge after it has stopped or nearly stopped, or the persistence of a very profuse discharge with pulsation, indicates the likelihood of mastoid involvement, as does the continuance or recurrence of pain. The most characteristic sign is a sagging of the postero-superior wall in the deepest part of the meatus.

It would be beyond the scope of this short article to consider the further signs and symptoms of acute mastoiditis and it will suffice to say that, should the surgeon decide that the mastoid is involved, nothing has to be opened, naturally the time of recovery is lengthened, but the prognosis with regard to ultimate repair of the middle-ear suppuration and the restoration of function should not be adversely affected.

CHRONIC SUPPURATION

It is a common experience that a certain number of cases of acute middle-ear suppuration become chronic, urgent requirement.

WEST SURFOLK GENERAL HOSPITAL.—This institution at Bury St. Edmunds is embarking on an extension which will cost at least £25,000. At present there is only one ward for women and some of them have to be accommodated in the children's ward and in a small auxiliary ward. It is not always possible to separate the surgical and medical cases. The provision of a new children's ward is necessary and the present one can then be converted into a second ward for women. A private ward for paying patients is another urgent requirement.

WALTER HOWARTH, F.R.C.S.,
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It will be well to consider to what extent purely conservative measures are likely to be successful in the ordinary case of chronic middle-ear suppuration, and in what percentage of cases the prognosis is a good one. If after removal of adenoids and the adoption of some general cleansing measures for the ear suppuration still continues, a careful course of conservative treatment at the hands of an otologist should result in about 50 per cent. of ears becoming dry. There are many different methods of treatment but the one which gives the most satisfactory results is a modification of the dry method that is advocated for acute cases. In the chronic case it is advisable to clean the ear thoroughly, not only by the external auditory meatus, but the middle ear also by irrigating it through an intratympanic cannula; the ear is then inflated by Valsalva's method to clear the middle ear of fluid, the meatus is again dried, and iodised borie powder is then blown in. In some cases polypi or small granulations may first have to be removed, particularly if the perforation is an attic one, and in these cases the prognosis is not so good, though many heal up quite satisfactorily. Some surgeons advocate the use of zinc ionisation, but I have not been able to satisfy myself that it yields superior results to the above method, and the cases in which it seems most successful—namely, those with large central perforations—are the very ones which respond most quickly to the more simple methods. If healing does not occur in two to three months it is probable that the suppuration is being kept up by some necrosis of the structures in the attic or in the mastoid, and a successful result is not likely to be obtained without a mastoid operation. It may be that a certain proportion of cases are doomed to this from the beginning and many of the most resistant ones may have a definite anatomical basis, as Arthur Cheate suggested many years ago. He found from examination of a large series of temporal bones that in 20 per cent. of all people the mastoid process remains of the acellular type, and that when the middle-ear tract is infected under these conditions and complete resolution does not take place or other complications occur, the disease passes into a chronic stage which may continue indefinitely and be associated with more or less destruction of the tympanic structures and the formation of polypoid granulations and cholesteatoma. In these cases a mastoid operation is necessary if the cure of the middle-ear suppuration is to be effected.

SPECIAL ARTICLES

BRITISH MEDICAL ASSOCIATION

MEETING IN MELBOURNE

SECTION OF DERMATOLOGY

Dr. S. WATSON SMITH (Bournemouth) presided at a meeting of this section when Dr. HERMAN LAWRENCE read a paper on the incidence of

Skin Diseases in Australia

He compared the order of the commoner skin diseases in England, America, and Australia, and explained the reasons for these variations. Eczema, dermatitis, and seborrhoea occupied first place in all three countries. In England the second place was taken by ringworm, pediculosis, and scabies, whereas these hardly came into the picture at all in Australia owing to the difference in social conditions. The climate of Australia favoured an out-of-door life; the poorer classes lived in separate dwellings and had greater conveniences for personal cleanliness. In Australia the second place was filled by a group consisting of rodent ulcers, keratoses, and epithelioma. This was due to two factors: (1) the increased amount of sunlight, and (2) the relatively low humidity. Adelaide had double the amount of sunlight and nearly half the humidity of London. In central Australia the average amount of sunlight was over 3000 hours per year, and the humidity under 30 per cent. The temperature was also much higher, rising to over 115° F. in the shade. The amount of ultra-violet light reaching the skin was therefore very great. Many of the patients had marked keratoses of the face, hands, ears, and fore-arms, without any signs of malignancy developing. After a history of the patient picking at the lesion, or perhaps of the application of CO₂ snow, one of the lesions would rapidly enlarge, and a frankly malignant epithelioma would develop. Italians and aborigines were almost free from these troubles. The bathless and sun-bathing cult, whilst lessening the likelihood of parasitic disease and skin tuberculosis, was a real menace in Australia as the cause of cancerous or precancerous lesions. Dr. Lawrence then described some rarer skin diseases of interest:—

Favus.—In 1917 a plague of millions of mice appeared in Queensland and travelled 1500 miles into South Australia. Some of the mice developed skin diseases which they passed on to human contacts. Many of the lesions were due to a parasite of the ringworm order, but the most troublesome ones from the point of view of treatment were due to an abortion—the *Achorion quinckianum*. X-ray therapy was of great value, especially in lessening the pain and shortening the time required for cure. Since 1917 there had been several minor troubles of this nature, and it was recognised that cases of favus, both in human beings and in mice, were more or less continuously present.

Dermatissus avium et galline.—During the past 30 years Dr. Lawrence had many times found the dermatissus to be a cause of pruritus in patients who had nothing to do with poultry yards, and in several cases he had actually traced the parasite to abandoned birds' nests near windows. He suggested that *Dermatissus avium* was often to be found in nests, and was a more common cause of pruritus than was generally known; text-books made little or no mention of it. It was often difficult to trace the cause of the pruritus to these parasites, as they were nocturnal in their habits, generally hiding in the daytime. The nests of starlings, pigeons, and sparrows were most likely to harbour them.

"Collision value."—When gamma rays from one direction collided with beta rays from the opposite direction, their combined action was termed by Dr. Lawrence "collision value." He made use of this action in the treatment of keratoses and rodent ulcers. The radium was held in metal holders and earthed. A high-frequency current was applied, with the patient standing on an insulated mat. In this way there was a veritable battlefield of rays and particles up to about 1 cm. distant. The treatment was rapid and effective, but care must be exercised lest the absorbed beta particles produce necrosis of the tissues.

Dr. W. UPTON (Adelaide) in analysing 3000 cases, had obtained figures similar to those of Dr. Lawrence, but in his series scabies and ringworm were more common. One case in eight was in the keratosis—rodent ulcer—epithelioma group. Many of these were elderly women leading an outdoor life and using no cosmetics. He had seen 5 cases (in 25) of lupus erythematosus developing after severe sunburn. Grim itch was a common disease in South Australia. Lip cancer occurred in non-smokers after prolonged sunburn and cracking of the lips.

Dr. F. H. MACKY (Adelaide) gave an analysis of 3000 patients treated at a cancer clinic. In these there were 1774 skin lesions, hyperkeratoses accounted for 456, squamous-celled carcinoma 431, and rodent ulcers 887—many patients had multiple lesions. In addition, there were 188 cases of lip carcinoma. Nearly all were proved microscopically. Multiple keratoses were best treated by X-rays. Ringworm of the feet and dhotie itch were common in South Australia, and cases of scabies seemed to be increasing.

Dr. J. M. O'DONNELL (Perth) also found hyperkeratosis a common complaint, particularly on the gold-fields. Psoriasis, ringworm of the scalp, and dhotie itch were common, and scabies was increasing. An epidemic of grain itch had occurred amongst wheat labourers.

Dr. J. WITTON FLINX (Sydney) had found epidermophyton often enough to justify its inclusion in the 15 most common skin diseases.

Dr. J. H. KELLER (Melbourne) had also found that sunburn predisposed to lupus erythematosus. Syphilitic diseases of the skin were now quite rare. The President agreed that the low humidity and factors predisposing to skin cancer. Favus was unknown in England but common in Scotland. Dhotie itch was frequently found in boys' schools.

Dr. J. IVAN CONNOR (Melbourne) read a paper on the treatment of

Staphylococcal Infections of the Skin

Irritation was dramatically relieved following the treatment, and the vesicles rapidly resolved. In the later stages, when eczema had supervened, ichthyol and salicylic applications were employed. An infective focus must be eliminated to prevent recurrence. When the fungus element had died out, and sensitisation to external irritants remained, removal of toxic foci and autogenous vaccines might help. Intravenous calcium therapy and high colon lavage were also used with success in these types.

DR. J. WITTON PLYNN (Sydney) said that epidermophyton was very common in Sydney, many cases being symptomless and ignored by the patient. Dressing sheds and gaols were places where the infection was easily spread. To check the disease the spread from one person to another must be prevented by keeping the feet covered and dry, and by dusting with a mild acid antiseptic powder. The floors of dressing sheds must also be kept as dry as possible. Reinfection could be prevented by treating the chronically inflamed toe-nails and correcting orthopaedic faults. Whitfield's ointment was, in his experience, of little value.

DR. S. W. SHIELDS (Melbourne) thought the disease more prevalent now owing to the increased amount of sport and to the popularity of trips to the tropics; moreover diagnosis was more accurate. The borrowing of towels in schools and camps was one of the common methods of infection. He had found Whitfield's ointment fairly satisfactory.

DR. BUTLER (N.S.W.) said that at one time 90 per cent. of the military cadets at Dunrobin had "Dunrobin rot" between the toes. The use of lotio potassium permanganate before and after baths and borie acid between the toes produced good results, but where the nails were involved treatment was less effective.

The President thought that the variable results obtained with Whitfield's ointment might be explained by variation in its composition, and by the fact that some patients did not rub it in vigorously enough. Spirituous solutions of aniline dyes were well worth trying.

SECTION OF PHARMACOLOGY, THERAPEUTICS AND ANÆSTHESIA

Prof. SYDNEY SMITH presided at a meeting of this section when Sir WILLIAM WILCOX opened a discussion on the

Use and Abuse of Hypnotic Drugs

He said that the advances in the study of hypnotics since 1913 included the discovery of many new derivatives of the barbituric acid series and the introduction of drugs other than alkaloids for basal anaesthesia. Insomnia was due either to psychological or organic causes and it was essential before commencing treatment to discover the cause. Hypnotics should be used only when absolutely necessary and when treatment by the usual general measures was unsuccessful. Patients taking hypnotics were likely to lose self-reliance and form the habit. Many operative cases did not require morphia or heroin, and as a routine they should not be administered post-operatively. Deaths from suppression of urine following their too free use were not uncommon. A dose of only 1/8 to 1/12 of a grain should be given, and repeated if necessary. The perfect hypnotic had

natural antitoxin of the patient at a high titre. by injections of toxoid to stimulate and maintain the acute infection, could be followed during convalescence the remainder much improved. Antitoxin, given in an infections, mainly furunculosis, is cured and the rest so improved that they ceased to attend treated with toxoid, 12 were regarded as cured, and series of 23 cases of syccosis barbe and syccosis nuchæ (12 c.cm.). The toxoid lost 40 per cent. of its antigenic power in six months in the ice-chest. In a many more. Forty had been given in one case cured furunculosis, but syccosis barbe often required after an intermission. Eight injections usually when beginning treatment, or on resuming injections It was wise therefore to start with very small doses occurred after the early injections of the series. percentages of cases, local, focal, and general reactions according to the patient's reaction and condition. 0.05 c.cm. was used, gradually increased weekly the treatment by toxoid injection a small dose of improvement in the clinical condition in man. In This produced an immunity in animals and an the titre of circulating antitoxin as much as 20 times. days, a toxoid was produced which could increase staphylococcal exotoxin with formalin for several

DR. JOHN C. BELSARRO (Sydney) read a paper on

Mycological Infections

Vesicular eruptions on the feet and hands, he said, were very common in Sydney. There were several clinical types: (1) superficial vesicular and (2) deeper vesicular, both these being on the fingers, toes, palms of hands, and soles of feet; (3) localised type; (4) scaling or eczematoid type; (5) intertriginous type, remaining localised to the interdigital spaces; and (6) hyperkeratoid type. Many of the vesicular manifestations represented an allergic reaction of the tissues to toxins liberated from primary foci of infection. The numerous reticulated factors—seasons, exposure, food, orthopaedic abnormalities, and so on—might all produce their effect by altering the reaction of the sweat. Normal sweat had an acid protecting cloak, but the sweat of the hands and feet was neutral or alkaline, owing to the absence of sebaceous glands and lack of evaporation. Alkaline sweat appeared to favour mycæal growth. Working on this hypothesis, lemon juice was tried; citric acid, apart from its effect on pH, also had a buffer action. The juice was used 4-5 times a day, in conjunction with liquor plumbi sub-acetate 1 per cent. hydragry ammon. dil. in lanoline, for.

yet to be discovered. Sir William classified hypnotics into the following groups:—

Low toxicity group—e.g., bromides, alcohol, Phenazone, Pyramidon, phenacetin, aspirin.

Chloral and its associates—Chloral was effective, safe, and rapid in action. Other drugs useful in this group were chloralamide, butyl chloral, chloralose, Chlorotone, paraldehyde (freely diluted) and Avertin.

Avertin was used extensively as a basal anesthetic. It sometimes produced toxic liver effects.

Urea group—Aldabin was very safe and very useful. It was best administered in a dose of 10 grains combined with a similar dose of aspirin.

Suphone group—Suphonal and trional were examples; they were slow in action, uncertain, and toxic. Skin rashes and toxic symptoms were not uncommon following their use.

Barbituric acid group—This group contained a great many preparations, whose toxicity depended on the molecular weight of the molecule combined with the barbituric acid; the heavier the molecular weight the greater the toxicity. They were quickly absorbed, certain, and very good in selected cases. Idiosyncrasy was not uncommon. Thyrotoxicosis, asthma, and its related diseases, affections of the kidneys, liver, and adrenals rendered patients highly susceptible to barbiturates, and these should therefore be used only after such conditions had been excluded by thorough examination. Sir William cited cases of fatal suppression of urine and heart failure following repeated taking of normal doses could produce curious manifestations amongst which were diplopia, squint, visual hallucinations, ataxia, and degenerative changes of the central nervous system. These were frequently attributed to cerebral tumour or other intracranial diseases. Accumulation of effects occurred, but chemically no accumulation in the tissues could be detected even after long periods of administration. Tolerance was not established to barbiturates, but the habit of taking them could be formed. They caused amnesia, and in this way could be responsible for suicide; an actress had walked out of an open window following only a small dose of a barbiturate. In big doses these drugs not infrequently caused fatal pneumonia. Overdosage should be treated by bowel and gastric lavage, caffeine as a diuretic and drainage of cerebro-spinal fluid by lumbar or cisternal puncture. To cerebro-spinal fluid drainage many good results in treatment were attributed.

Alkaloidal hypnotics—Morphia and heroin should not be used in the presence of hepatic or renal deficiency. In selected cases free but not prolonged use should be made of them, in adequate dosage. Apomorphine hypodermically was a good hypnotic in delirium tremens. It produced nausea followed by sleep.

Basal anesthetics—Amytal, Nembutal (grs. 5), Evipan, and others were useful but dangerous if idiosyncrasy existed. Sir William had seen a case of pneumonia after the administration of 3 grains of Nembutal. In conclusion, he said that in prescribing of the less toxic drugs should be selected. If a barbiturate were to be administered, the patient should be examined for the abnormalities likely to cause idiosyncrasy.

Prof. R. D. RUDOLF (Toronto) congratulated Sir William on his fair and moderate statement. He considered insomnia to be due either to increased irritability or increased irritation of the central

Dr. R. DAVIES (Melbourne) asked whether barbiturates should be used in cases of pneumonia.

Dr. N. W. MARKWELL (Brisbane) said that chloral and bromide were the best hypnotics in pneumonia, especially for the post-febrile insomnia. For post-critical delirium chloroform anesthesia and gastric lavage were used, but he gave 1 drachm of bromide hourly until sleep ensued. One patient had been given 1 ounce in 12 hours. He asked Sir William what was the best hypnotic in this condition. He pointed out that in coronary thrombosis large doses of morphia could be safely given. In cases of threatened nervous breakdown he used barbiturates in adequate dosage and stopped their use gradually.

Dr. D. G. KEXTON (Melbourne) asked if a second dose of paraldehyde was less effective than the first, and whether barbiturates ever caused excitement. He gave his own experience of amnesia for 24 hours following 12 grains of sodium amytal administered in divided doses; in his own case morphia relieved pain but did not induce sleep. He confirmed the good effects of chloral and bromide.

Dr. W. SIMMONS (Sydney) asked what hypnotic Sir William recommended for the insomnia of pregnancy.

Dr. Z. MEXELL (London) said that he could not persuade Sir William to take a barbiturate for sea-sickness on the voyage out from England. Hedonal (not a barbiturate) was used frequently in Russia, where it was the cause of much pneumonia. He stressed the amnesia and the dangerous toxic symptoms produced by barbiturates in hypersensitive patients. Synergism played a large part and was well exemplified by the marked effect of small doses of morphia with barbiturates. Cerebro-spinal fluid drainage was of great value in treating toxic symptoms due to the barbiturates. Morphia was preferable to heroin because the former was less depressing to the respiratory centre. Depression to respiration by heroin was very marked when it was used in conjunction with evipan. Intravenous morphia was useful but great care was necessary.

Dr. B. L. STANTON (Melbourne) said there was an accumulation of effects following small doses of the barbiturates. This was evidenced by the marked effects produced by repeated small doses in the treatment of high blood pressure. The nervous irritability of children should be treated with small doses of barbiturates. He had treated a case of cerebral poisoning but sent the patient into a deeper coma. This was evidence of synergism. The combination of codeine and aspirin was a good hypnotic and analgesic.

Dr. IVAN MAXWELL (Melbourne) said that ephedrine given in cases of asthma had often caused wakefulness, so he prescribed luminal or amytal as a sedative. Idiosyncrasy to small doses of aspirin was common in asthmatics, but no sensitivity to it was demonstrable in skin tests. He inquired whether luminal or bromide was preferable in the treatment of epilepsy.

Sir WILLIAM WILCOX said that he did not recommend the use of barbiturates in pneumonia because no other drugs were so likely to cause bronchopneumonia, and in addition they were not sufficiently powerful. For post-critical delirium he preferred hot packs and tepid sponges to drugs, which should only be used after physical measures had failed. He thought large doses of bromide were useful but would hesitate to use as much as 1 drachm hourly. However, the proof of the pudding was in the eating. He recommended that when barbiturates were required, well-known ones like veronal and Medonal should be prescribed. He agreed that a second dose of paraldehyde was not as effective as the first. Barbiturates often caused excitement. Morphia often relieved pain without inducing sleep, and sometimes caused excitement. The effects of the barbiturates were cumulative; a patient who had received 1 gram of luminal daily for one year had developed toxic jaundice. Veronal in usual doses took 2-3 days to be excreted. The barbiturates and morphia should not be used for the insomnia of pregnancy, since the effect of the hypnotic on the child had to be considered. It was best to adopt simple physical measures, and if hypnotics were required aspirin or alcohol should be administered.

Prof. W. A. OSBORNE (Melbourne) read a paper on the Vasoconstrictor Principle in the Skin of the Frog (*Hyla Aurea*)

He said that when experimenting on a frog he became very painful but not blood-shot. This chance observation led him to further experiments. He made an extract of the frog's skin which on injection consisted of the peripheral arterioles, completely closing them. The heart stopped beating as a result of coronary spasm, and the blood pressure remained high. The experiment had been repeated and the result confirmed. He knew of no other drug which produced complete obliterative spasm of the arterioles. The effect of the extract was only slightly reduced by boiling. He suggested that this curious principle in the skin of the frog might some day find a clinical application.

Urinary Antiseptics

Mr. JOHN TAIT (Melbourne) opened a discussion on

He said that antiseptic drug treatment of infections of the pelvis of the kidney must be ineffective because the pelvis emptied so frequently. In determining what could be expected from drug treatment the basal pathology of the various urinary tract infections had to be considered. A great many infections were blood-borne. The gall-bladder had been the origin of the infection in one of his patients who had been cured of a chronic pyelitis by cholecystectomy. The majority of the infecting organisms came from the bowel. If they were not destroyed by the normal immunity mechanisms they could cause urinary tract infections. Mental exhaustion was the main cause of impairment of the normal mechanism. Chronic pyelitis was a disease of professional people. A small number of cases of chronic pyelitis gave a history of bowel infections. There was great difficulty in curing these infections by drugs. Hexamine (urotropine) was the most useful. He quoted a case of chronic pyelitis who had been kept comfortable with hexamine for years. Hexamine should be given between meals when the gastric acidity was at its lowest. Hexyl resorcinol (Caprokol) was not more effective than hexamine.

Sir WILLIAM WILCOX agreed with the remarks of Mr. Tait and Mr. Mortensen. Changes of antiseptics were beneficial. One drachm of potassium citrate 3-4 times daily for 3-4 days at intervals of 3-4 days was useful. Metromene (methylene-bis and hexamine) was used a lot in England apparently with good results. An autogenous vaccine was of value in treatment and also vitamins A and D in building up immunity. Hexamine salicylate (Cytotrophin) intravenously was effective in acute toxic conditions arising from the urinary tract.

Mr. MORTENSEN, replying to Dr. Maxwell, said he preferred catheterising a patient 2-3 times daily with Sir William concerning the beneficial effects of cytotrophin.

Dr. MAXWELL said that hexamine for its antiseptic action required a concentration of pH 5 and needed to be in contact with *B. coli* for six hours to destroy it. The pH was difficult to obtain clinically and it was almost impossible in cases of acute cystitis to keep the urine in the bladder for several hours. Similarly in pyelitis, contact with the antiseptic was not sufficiently long. Hexamine in cases of retained catheter did not prevent infection.

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Mr. H. MORTENSEN (Melbourne) said the antiseptic properties of drugs depended on the form in which they were excreted in the urine. Some antiseptic drugs caused a beneficial effect by their diuretic action. Secondary infection was frequently the first sign of some lesion, such as calculus, of the urinary tract. The three types of urinary antiseptics were: those derived from plants, for example, buchu which probably acted by its diuretic effect; those having a direct antiseptic action; and those which altered the reaction of the urine. Hexamine and acriflavine were probably the best. Hexamine was irritating to the alimentary canal and might produce acidosis. N.A.B. was effective against the urine, large doses of potassium bicarb. or potassium citrate should be used. Beta-hydroxybutyric acid was the factor which inhibited *B. coli* in patients taking a ketogenic diet. A reaction of pH 5.2 to 4.6 was required in vitro. Twelve grammes of mandelic acid and 8 grammes of ammonium chloride daily were effective.

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Mr. MORTENSEN, replying to Dr. Maxwell, said he preferred catheterising a patient 2-3 times daily with Sir William concerning the beneficial effects of cytotrophin.

Of the antiseptic dyes Pyridium and Neotrophin were good and very penetrating. Flavine and mercurochrome applied locally were often effective in concentrations of 1 in 400, but much higher ones could be used if the state of the kidney pelvis permitted. Intravenously these two drugs were not efficacious. A combination of methylene-bis and sandalwood oil was a good sedative antiseptic. It was desirable in addition to drug treatment to control the source of the infection, to put up the immunity response, and to promote a free flow of urine.

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MALARIA IN CEYLON

MUCH that has been written about the epidemic of malaria in Ceylon is inaccurate or misleading; but with the publication of reports¹ by Colonel C. A. Gill and Dr. Rupert Briere-Light we now have an official account of it. Dr. Briere-Light is director of medical and sanitary services in the island; Colonel Gill, formerly chief malaria medical officer and director of public health, Rangoon, was appointed as expert adviser on malaria by the Ceylon Government during the epidemic. The former states that his report is concerned chiefly with facts and figures, while the latter reviews the facts and deduces the policy that should be followed by the Government of Ceylon in the future. From these reports we learn that the epidemic is the greatest pestilence in the recorded history of the island. In seven months it destroyed 80,000 lives, and indirectly it caused incalculable misery and distress; for it interrupted trade and business, paralysed village life, and led to an almost complete cessation of agricultural operations for a long period with consequent dire privation and starvation.

Although there had been previous epidemics on a large scale, and although two-thirds of the island—the north, east, and south-east parts of Ceylon—once densely populated, are now so malarial that they contain only about 1 per cent. of the population, this outbreak came as a bolt from the blue. In the last week of October and first week of November, it appeared as an "explosive outbreak" in an area of about 5800 square miles. The peak of the epidemic was judged by sickness in the middle of December, 1934, and as judged by mortality in the middle of January, 1935; from then it slowly declined except for a small rise in May and June. At the height of the epidemic there were 60,000 attendances a day at the government institutions in the affected area, and by the end of April 1½ million cases. Curiously enough this epidemic area was situated between the intensely malarial area in the north, and an area in the south-west, where there is little malaria normally, and which even during this epidemic was little affected.

Part of Colonel Gill's report is occupied by a discussion of the cause of the epidemic. He considers an epidemic "was due, if not overdue." He acknowledges very properly the valuable work during the past 12 years by Mr. H. F. Carter, medical entomologist, who had incriminated *Anopheles culicifacies* as the chief, if not the only important carrier of malaria in Ceylon, and who provided him with full information on the bionomics of the 18 species of *Anopheles* in the island. *Culicifacies* breeds in rock and sandy pools in the beds of rivers, but it is also found in many other situations, like wells, borrow pits, quarries, drains, pools, and sheets of water formed during the rains. In most years the rains flush the rivers and sweep away the larvae, but during droughts the larvae are undisturbed and hatch out in enormous numbers; hence the association of malaria with rivers in Ceylon which has long been recognised. Colonel Gill sounds a warning that mosquito control in the river-beds alone is not likely to be successful. The permanent malaria in the north, east, and south-east parts of Ceylon receive rain from the north-east monsoon in October, November, and December; in these there is a single malaria wave with a broad

SYMPTOMS AND TREATMENT

On the clinical side the predominating parasite is reported as *Plasmodium vivax*; but there is some doubt whether the microscopic work in many hospitals was accurate. A special study of 647 cases showed that besides the common type of fever, there were cerebral cases, algid cases, diarrhoea and dysenteric types, oedematous types, and malaria complicating pregnancy often with disastrous results. In the treatment of malaria during pregnancy Dr. G. A. W. Wickramasuriya considered that "far from being an oxytocic, quinine administered in effective therapeutic doses, by rapidly controlling the malarial infection and the high temperature, prevents premature interruptions of pregnancy and intra-uterine fetal death," and his views have been generally confirmed by other medical officers. The association of ankylostomiasis, or malnutrition, with malaria was regarded as the cause of the partial or generalised oedema which occurred in a large number of cases in the later stages of the epidemic, chiefly among children.

Colonel Gill discusses the distribution of the malaria and the epidemiology; but despite certain correlations between rainfall and malaria, and full entomological data, "the entomological theory does not appear competent to explain the whole phenomenon presented by the epidemic and the intriguing paradox therefore remains that malaria epidemics in tropical Ceylon are determined by drought, whilst in sub-tropical India they follow excessive rainfall." An attempt is made to explain the paradox, by suggesting a periodicity of the parasite, "possibly the quality variation referred to as 'the unknown influence' the 'X factor' of Pettengkofers, the epidemic potential, and 'the general determining cause' of modern epidemiologists. Whatever may be its nature, the predominant attribute attaching to periodicity as the variable amplitude of its range." If other conditions are not favourable even this universal "influence" cannot produce an epidemic. And so in spite of a highly congested population containing a high percentage of susceptible children, in spite of the presence of drought, in spite of special hardships from economic conditions, and in spite of the presence of river-beds, the "influence" had little effect in the south-west area of the island, where the carrier insect, although present was not widely prevalent. Nor had the "influence" much effect on the permanently higher malarial area.

Altebrin and Atebrin mussonate were used in

hospitals, but were not considered suitable for use at effects. Comparing atabrin and quinine an appendix to Dr. Briereville's report states:—

"Deaths.—Among 681 patients treated with atabrin 17 or 2.5 per cent. died and among 424 treated with quinine 6 or 1.4 per cent. died. Four of the 17 deaths following atabrin miasmata were attributed to the toxic effect of the drug. If these four cases are excluded, the natural death-rate among the atabrin treated cases would have been 1.9 per cent., which is not significantly greater than the death-rate for the quinine treated series."

Discussing the toxic effects and the sudden deaths after atabrin injections, the appendix states that—"among adults, pregnant women have been found particularly liable to collapse after injections. Convulsions due to malaria were of frequent occurrence among children in the early stages of the epidemic. Convulsions occurring a few minutes or hours after an atabrin injection and attributed by the medical officer concerned to the atabrin injection have occurred in both children and adults. They were always fatal."

PROPOSALS FOR THE FUTURE

In Part II. of his report, on the Control of Malaria in Ceylon, Colonel Gill discusses the scientific problem under the headings, the mosquito factor, the parasite factor, and the human factor, and summarises this by saying endemic malaria in Ceylon presents no novel or remarkable features. Although these epidemics have hitherto been regarded as uncontrollable, there is now reason to believe that their emergence can be prevented if measures are taken that will reduce the spleen-rate and the anopheline-rate (*A. culicifacies*) to the level of these factors in the south-west healthy area. This will take time, but can be accomplished if medical science provides the technical knowledge, Government the machinery, and public opinion the motive power. Government having decided that the population is sufficiently advanced politically to control its own internal administration, the success of the scheme will depend on the actual co-operation of the people. Colonel Gill reminds them that so far only a few antimalarial schemes had been begun in Ceylon, and had achieved only a certain measure of success—not from any fault in the schemes, but from lack of popular interest resulting in a lack of funds to complete or maintain them. The recent epidemic, however, has produced a profound change in public opinion.

GENERAL DISEASES

During the first few days Venereal disease was considered from the international standpoint. It was accepted as a fact that syphilis and gonorrhoea could be made extinct throughout the world within a single year if all who suffer from them would have themselves fully treated. Starting from this principle the Congress proposed the application of legal penalties and the State control of treatment, together with the regulation of prostitution. From this it passed on to discuss some of the social questions arising in the practice of dermatology and venereology, including out-patient dispensaries, sick clubs, beauty specialists, barbers, masseurs, and quacks. Prof. Kertl (Vienna), in an address lasting several hours, pointed out that while specialists in dermatology and venereal diseases keep strictly to their own territory, practitioners in adjacent fields press ever harder on their confines; indeed, it is often suggested that the treatment of syphilis is rather than the business of the internist and the neurologist. The latter must gain exact knowledge of the borderline of his subject—even if it means adding a couple of years to his training—and that when he has such knowledge even neurosyphilitic affections should come within his province.

ALFREDUR (Stockholm) early created a sensation by proposing that the present division of syphilis into three stages should be abandoned; by means of many histological preparations he demonstrated that this infection, at all stages and in all places, will always produce what is essentially the same lesion. This view was accepted by many other pathologists present but on the whole was considered unproven. GRUYERER, who has been studying the nature of the Wassermann reaction, reported that he has obtained positive tests from healthy animals treated with "spirochaete lipoids," whereas previous treatment with non-specific "organ lipoids" did not yield the same results. SCHERRECHENBERG (Paris) made known his successes in the treatment of syphilis

THE CONGRESS OF DERMATOLOGY (FROM OUR NEAREST CORRESPONDENT)

Institute in commemoration of the Jubilee; Colonel Gill recommends that a malaria department be accommodated in a wing of a main institute. He states his proposals will cost money; "good health, including freedom from malaria, is a purchasable commodity, but it is doubtful whether it is worth having as a free gift." Financially stricken as the island has been by the world depression and people of Ceylon have now the anxious task of deciding how the maximum benefit is to be obtained from the minimum expenditure; which of Colonel Gill's recommendations are to be carried out now and which postponed; for Colonel Gill says of this, "balanced scheme" that "many parts indeed can be postponed or omitted without destroying its general structure."

No attempt is made to frame an antimalarial scheme for adoption in each individual area. Colonel Gill recommends provision of hospital facilities and that apothecaries and dispensers in the Government and estate hospitals and dispensaries be replaced by registered medical practitioners provided with more accurate; this is to control the parasite factor in man. Malaria control schemes should be undertaken in urban, rural, and estate areas; by land drainage, irrigation and development schemes, and river training operations. He deprecates colonisation schemes which involve the introduction of non-immune settlers into hyperendemic areas; and he considers antimalarial measures in such areas will not be effective unless accompanied by measures designed to promote rural betterment by increasing the food-supply and relieving economic distress.

The recommendations include establishment of a Sanitary Works Board, with the Minister of Local Government as president, and an equal number of official and unofficial members. It is also advised that an Anti-Mosquito Ordinance be passed. A proposal had been made to erect a Malaria Research

in animals by means of a guinea preparation of his own, but it was felt that further evidence of its efficacy was required. Also in the discussions on syphilis an interesting dispute arose between Arzt and Kertl, both leading clinicians of Vienna, about the importance to be attached to early changes in the cerebro-spinal fluid. Arzt looks on these changes as an indication for treatment with malaria, whereas Kertl upholds the conventional view that they are mostly transitory. FIZARD (Paris) took the view that fever therapy is desirable in syphilis (1) if the blood-serum is obstinately positive, or (2) if there is a positive Wassermann reaction of the cerebro-spinal fluid or other evidence of neurosyphilis. If the blood Wassermann cannot be made negative he prefers subpyrexia in neurosyphilis and G.P.I. he uses malaria, or subpyrexia if it fails. LUDWIG WINKLER (Oradea, Rumania) drew attention to his priority as advocate of subpyrexia therapy in neurosyphilis, and spoke of its value in cardiovascular and arthritic syphilis as well. He also referred to the importance of estimating the erythrocyte sedimentation-rate as a control of cure of syphilitic infection. HILGERMAX (Landsberg) and SPRITZER (Vienna) gave an account of their method of inoculation with a spirochete vaccine, which they believe makes the organisms of syphilis accessible to chemotherapy.

The five largest American clinics reported their experience of cardiovascular syphilis; it appeared that in 6553 cases of syphilis—treated early, late, satisfactorily, unsatisfactorily, or not at all—the percentage of cardiovascular complications was 9.9; while in the smaller group, comprising only those which had not been treated early enough, it was 23 per cent. The Americans are the champions of uninterrupted treatment at all stages of syphilis. Gonorrhoea did not receive as much attention as sometimes. Austrian and German members of the Congress expressed doubt about the value of the serological reaction, which they considered very optimistic to use this reaction as a criterion for treatment. As regards actual remedies no advance worth mentioning seems to have been made during the past few years. The horse serum injections proposed by Szilvassy have proved useless in GUSZAKY'S hands, and all the speakers seemed to agree that vaccines are valueless in the acute stage, while their action on complications is probably not specific. Of new preparations methylene-blue and acridine dyes seem to be the only ones which represent an improvement. Goldberger's abortive cure with Tryparazine was received very dubiously, and some rejected it altogether.

SKIN DISEASE AND THE BODY AS A WHOLE

With the object of increasing the international solidarity of dermatologists a number of committees were appointed to go into such problems as cutaneous tuberculosis, industrial and other environmental affections of the skin, and the classification and nomenclature of skin diseases. This last committee, under the leadership of Howard Fox of New York, is faced with a difficult task of reconciling many different attitudes; it has to bear in mind the different effects of identical causes and the identical effects of different causes, the individuality of the patient, the transitory nature of symptoms, the varying violence of malades, and the accumulation of diverse processes. In the present state of knowledge no system of eternal validity can be laid down, but one can imagine a working classification which would adapt itself to the advance of knowledge.

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LEVADITI (Paris), NICOLOAU (Bucharest), and others introduced the important subject of the filtrable viruses, and spoke of the proof that lymphogranuloma inguinale is due to a virus and can be recognised with the Frey antigen. URSACH and WOLFMAN reported that pemphigus vulgaris and dermatitis herpetiformis are likewise due to a virus, while NEUBER (Debrecen) stated that that rhinoscleroma is caused by a capsulated bacillus—findings which will be of great interest provided that they can be corroborated. MAX-SHNEIDER (Essen) brought forward statistics supporting the Russian view that lupus tuberculosus. He denies that phthisical patients are particularly liable to contract lupus; indeed, he finds that their illness tends more towards recovery when they do so. Also speaking on lupus, AITKIN (Edinburgh) said that among 270-280 cases he had found that about half followed tuberculous infection of glands of the neck. It was very important, he said, that practitioners should recognise the great value of ultra-violet irradiation for tuberculous adenitis.

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Much was said about the action of vitamins on the skin, and several speakers assumed that they have a preventive or curative action; a Hague professor, for example, reported good results from the use of vitamin-rich raw foods in conditions such as psoriasis and eczema. The importance of dietetic treatment in skin diseases where the patient suffers also from digestive disorders was fully recognised. Due consideration again was given to the role of focal infections.

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carried to excess. FRANKS POTTER has not found short and ultra-short wave therapy particularly valuable; physicians from the United States quoted cases which suggest that diathermy is just as efficacious. To sum up, although this Ninth Congress brought no great new discovery it has cleared up many problems of diagnosis and treatment and brought out new principles and objectives. Apart from skin diseases caused by external infections, it seems that the time is not far distant when the use of ointments in dermatology will be almost extinct. What has become chiefly important, for efficient diagnosis and for efficient treatment, is a knowledge not of the changes discovered but of their underlying causes.

LONDON WATER

SOME PRESENT-DAY PROBLEMS

Colonel Harold's first report¹ as Director of Water Examination to the Metropolitan Water Board is full of interest, for, as he says, he came from the comparative quiet of a peace-time army into the heart of the Board's operations at a time of national emergency arising from two years' drought when it became necessary to consider matters of high policy. London was, however, saved from anything more than anxiety and inconvenience owing to the huge storage systems built up in accordance with the wise policy of his predecessor; and the danger being over Colonel Harold feels free to poke a little fun at the Londoner who talks about a condition of drought when he has sufficient water for all purposes, including a daily long bath. He compares it with the water shortage of an Eastern war-time cantonment, where the daily issue resolved itself into a petrol drum of water, derived from brackish underground sources, receiving the unpurified road washings of an unpaved Eastern town. But the shortage of water in London, such as it was, led to the relaxation of a provision in the Thames Conservancy Act of 1932 that every day 170 million gallons of water must pass over Teddington Weir. This eased the situation, but the reduced flow of the river must have reacted on the condition of the tidal reaches if only to a small extent. At Barking sewage carried upstream by the tide gave rise to many complaints from those using the low tide figure. The minimum statutory flow of fresh water over Teddington Weir of 170 million gallons per day obviously bears to the average volume mentioned the ratio of 170 to 15,700 or 1 to 93. A reduction of 30 million gallons per day in the statutory flow would change this ratio of fresh to tidal water to 1 to 113, a change which could have little adverse effect on the Pool of London. Also it should not be overlooked that some of the extra water abstracted from the river must ultimately reach the Thames.

TASTE TROUBLES

Apart from this special source of complaint London consumers found little to grumble about last year. The complaints reaching the offices of the Board

Metropolitan Water Board, 29th Annual Report by Lt.-Col. C. H. Harold, O.B.E., M.D., D.P.H., London: P. S. King and Son, 10s. 6d.

numbered no more than one three-thousandth of a per cent. of population served. Only half of these were complaints about taste, and again only half were accepted as valid after investigation. Strictly speaking the responsibility at law of the Water Board terminates at its mains—no small liability in itself for there are 7760 miles of them. But in practice all complaints are investigated on account of the light which they may throw on adventitious pollution. During the year definite pollution was twice traced to cross connexions of piping in important buildings. Generally speaking, Colonel Harold says, most of the "The tank room offers great attractions as a playground on wet days and the household storage system is a fertile source of pollution. In one case, where a complaint was made that tap water was unfit for dispensing, inquiry revealed an aggregation of lead, shavings, and oakum left in the pipe by the plumber. Evidently every consumer should demand of his landlord a tap direct off the main for drinking purposes. In periods of high atmospheric temperature complaints of a distasteful taste were sometimes received and later of an earthy taste at the time when a profuse growth of algae dies on the filter beds. But, all in all, London water is no mean beverage, and its palatability may be largely attributed to its moderate hardness. During the year a committee of residents in West Wickham, after wide investigation, concluded that whilst it would be possible for their water to be softened, that would on balance be no advantage to the community.

OZONE OR CHLORINE

But the scientific interest of the present report is greeted as to the choice of the final disinfecting agent in water purification. The drought brought to light defects in the filtration system as a result of which chlorine and ammonia points have been installed in many places as an additional safeguard. The continuous flow of water through storage systems results in an enormous reduction of the bacterial and organic content of the water. Next comes an efficient filter barrier, and finally a chemical process which needs time for effective action either in contact tanks or in the mains before the draw off. The aim of successful water practice is to supply a worked-out weathered water with a composition like the unpolluted natural water, and in contradistinction to campaigning measures chemicals are used only as a makeshift process and as a corrective to counter an emergency. The importance of such an invulnerable barrier is illustrated by an incident at Milwaukee in 1916, when the chlorine was accidentally shut off for several hours and the water was badly polluted for one day. The result of this was 25,000 to 100,000 cases of diarrhoea followed by about 600 cases of typhoid fever with 60 deaths. The choice of final process for London water rests between ozone and chlorine—or rather combinations of chlorine and ammonia, for free chlorine is no longer used. Ozone imparts an excellent finish to water and removes the majority of disagreeable tastes. When it has done its work it leaves nothing behind but oxygen. A water cannot be overdosed with ozone, since the gas is ultimately dissipated. Ozone is increasingly popular in France and has been tried out at one of the Board's works at Barn Elms. But whereas chlorine continues to function as an efficient germicide under the worst possible conditions, ozone requires a filtrate of fairly uniform quality. On the other hand, with ozone the contact period

it non-infectious to monkeys and had in addition been shipped from New York to the west coast. The disease developed well within the period of incubation from the date of known exposure. Critics accept the safety of Dr. Brodie's vaccine, but consider further experience necessary to prove its efficacy. So indeed does Dr. Brodie, who is refusing to supply his vaccine except for properly controlled experimentation.

Whooping-cough

Dr. Louis W. Sauer reported on results obtained with his pertussis vaccine which is now being used extensively by physicians in this country. Dr. Sauer sees no evidence that pertussis vaccine has therapeutic value. However, with vaccine prepared and administered in the Evanston Hospital he had had complete success in prophylaxis. With "authorised" commercial vaccine the success has been less complete as is shown in the following Table.

Three-year Report on Pertussis Immunisation

Authorised commercial vaccine (Sauer's c.c.m.)	Infected.	Exposed		Failures.
		family.	outside.	
Private	475	30	23	5
Health Department .	612	13	50	4
Two orphanages ..	242	23	—	1
Cradle (illegit. infants)	187			—
—	1516	144		10

used be only a few minutes, in contrast with the one after a standard dose of ammonia and chlorine. But then again the longer contact period may provide, and not infrequently does, a completely sterile water. There is a further suggestion, which requires careful examination, that ozonized water after exhaustion of the ozone becomes more susceptible to bacterial growth. Colonel Harold sums up the situation thus. From the consumer's point of view, ozone presents the greater attraction, and if properly applied is an effective sterilant, provided that at all times an absence of breaches in the filter barrier can be guaranteed. On the other hand, chlorine offers an all-round security under every possible condition and is the safety-first of waterworks practice.

AMERICAN PUBLIC HEALTH ASSOCIATION

(FROM AN OCCASIONAL CORRESPONDENT)

More than two thousand fellows, members, and guests of this association were registered at the annual meeting held at Milwaukee, Wisconsin, from Oct. 7th to 10th. This is the largest attendance recorded since a registration fee was inaugurated.

Poliomyelitis

The summer epidemic of poliomyelitis and the resulting popular excitement had their effect upon the programme. The governing council voted the creation of a special committee to confer with the U.S. public health service and to announce to the press and to the public whenever it may be necessary such dicta regarding the administrative control of poliomyelitis as may be calculated to allay panic and quiet or prevent unreasonable agitation. As to whether there is any knowledge to disseminate a difference of opinion was expressed. The epidemiologists state that we know at least as much about poliomyelitis as about scarlet fever. An experienced health officer retorts by saying that if every health officer died to-morrow there would be neither more nor less poliomyelitis as a result. Dr. James P. Leake, senior surgeon U.S. public health service, made an effective plea for the reporting of paralysis whenever it occurs. In North Carolina, where this year's epidemic began (in April), 90 per cent. of cases reported were paralytic. This is a quite unusually high proportion. In New York, where there was an excess incidence though hardly an epidemic, 55 per cent. of the cases were paralytic. This summer gave occasion for the trial on a fairly large scale of the vaccine prepared by Dr. Kolmer and Dr. Brodie. Dr. Kolmer's vaccine is a living attenuated virus. It was given to some 12,000 persons, nine of whom subsequently developed poliomyelitis, eight of them with paralysis. Dr. Kolmer stage of incubation and developed because the vaccine was given too late to produce immunity. His critics, however, are not satisfied that there was no causal relationship between vaccination and pathogenesis. They refuse to regard the living vaccine as safe. Dr. Brodie's vaccine prepared in the laboratories of the New York City department of health is a killed vaccine. It has been given to 8000 persons and one only has developed poliomyelitis. The vaccine given in this case had received three times the treatment needed to make

Unsolicted reports have been received from 58 physicians in 22 different States, the total figures given being 6455 patients injected, 476 exposed, and 81 failures. The high proportion of failures to exposures and the low proportion of exposures to injected are explained on the ground that many of these physicians had no means of knowing of exposures except in such cases as subsequently developed the disease.

Every attempt has been made to ensure that the "authorised" commercial vaccine shall be prepared by exactly the same methods as those used in Dr. Sauer's laboratory in Evanston. Three possible causes of failure were discussed: (1) The warming of the vaccine. At the Evanston Hospital this is not allowed to take place at any time between preparation and administration. In distribution of commercial vaccine over the country uninterrupted refrigeration has not been practicable. (2) Age of administration. Seven out of ten failures occurred in children over 3 years of age. As a result of this observation Dr. Sauer is now recommending that children over 3 years receive a total dose of not less than 10 c.c.m. (3) Use of recently isolated strains. In preparation of commercial vaccines there may be difficulty in obtaining recently isolated strains. Microphotographs were displayed showing the marked changes in morphology undergone by *B. pertussis* in culture.

Mental Hygiene

Dr. Elizabeth I. Adams, of the department of psychiatry, Columbia University, made a strong point for the inclusion of this subject in official public health programmes when she pointed out that psychogenic illness, like tuberculosis, is mainly acquired in childhood and is a family disease communicated by prolonged and repeated exposure. Prof. Grant Fleming, of McGill University, while

accepting the wisdom of proceeding slowly in making additions to the official health programme, encouraged voluntary organisations to place the trail and described as centres around which provincial mental hygiene organisations can be created.

Lay Administrators

In the report of the committee on professional education, the following passages gave rise to much comment and some criticism:

In practice in the United States there have been in the past many non-medical health officers, some of whom have served with such distinction as to demonstrate conclusively that a suitably educated individual, not a doctor of medicine, can administer a health department efficiently and well.

While there are many positions in the field of public health which can well or best be filled by workers well educated in the theory and practice of public health but not possessing a medical degree, the position of administrative health officer, whether of state, city or county, demands in general the possession of medical as well as public health training.

We do not recommend the discontinuance of courses in public health for the education of non-medical persons, but the committee believes that such persons should be informed before entering on a course that their probable field of activity will be curtailed by the absence of a medical degree, and that their chances of succeeding to an important administrative position in the field of public health are not bright.

Young men and women intending to enter the field of administrative public health should be advised to secure a medical degree, specialising as much as possible during the medical course in the various fields of preventive medicine, and adding the special courses in public health at the end of the usual hospital internship. It is from such a group that most may be expected in the coming years.

The remarkable personality and teaching ability of the late Prof. Sedgewick is responsible for a group of highly successful lay public health administrators. It is still uncertain to what extent the non-medical public health officer can win a place for himself in public health administration in this country. Should we choose to specialise in social welfare as well as in public health there is a distinct possibility that his prospects may be brighter than this report would indicate.

The new president-elect is Dr. Thomas Parran, Jun., health commissioner of New York State, the president being Dr. Walter H. Brown, professor of hygiene at Stanford University. New Orleans was selected as the convention city for 1936.

MEDICINE AND THE LAW

Damages for Shortened Life

In *Rose v. Ford*, which came before the Court of Appeal last month, further light was thrown on the change in the law whereby a right to damages for negligence can now survive for the benefit of a dead person's estate. This class of case is of interest as showing the attitude of the courts to the assessment of damages for shortened expectation of life and similar questions. At Birmingham Assizes Mr. Justice Travers Humphreys had to consider the case of a girl who, as the result of a motorist's negligence, was injured fatally. Soon after the accident her leg was amputated; two days after the amputation she died. The judge had awarded to her representative

The Use of Films as Criminal Records

Two days after the decision in *Hauptmann's case* at Trenton in New Jersey (set out in this column last week), an Inter-State conference on crime prevention was held in the same building. It was specially concerned to remove obstacles due to the separate and independent jurisdictions of the several States of America. If a general committee a murder and can slip over the border into an adjoining State, he will probably escape the consequences of his crime. The conference decided that the States would make compacts with one another for the surrender of criminals, the summing of witnesses, and the checking of prisoners released on parole; in effect, the State boundaries would cease to exist. The conference also recommended the adoption of universal fingerprinting throughout all the States and the provision of facilities for interchange of criminal records. One other resolution reveals an interesting element of psychology. It advocated the trial and use of "sound moving pictures" in the identification of criminals. "The New Jersey suggestion is that a film be taken of persons convicted of serious crimes. The usage against a chart of Bertillon measurements. At present detectives see him under these conditions on conviction, but a film record would refresh their memory in later years and might be exhibited in

failure was final. The defence had failed to establish these points and the he was actually cutting someone's throat. The he thought he was merely peeling an apple when the nature and quality of his act—as if, for instance, and (3) that, in killing his victim, he did not know or such diseases he suffered from a defect of reason; which the accused had to establish: (1) that he suffered from a disease of the mind; (2) that because of insanity. Lord Hewart enumerated the three points service, had said that there was no evidence of medical officer of long experience in the prison which rejected the application. Dr. Grierson, a Chief Justice delivered the judgment of the court contended that they were delusions. The Lord were damaging evidence of guilty intent; the defence getting steadily worse. His letters and statements since last February, and that his condition had been It was suggested that Bousquet had not been normal "drunk" boxer would not know what he was about. A witness at the trial had said that a "punch-received in the course of his career as a heavy-weight mentally affected by the blows and bruises he had murder owing to his being "punch-drunk"—i.e., boxer, had been insane at the time of the alleged Bennett, K.C., urged that his client, a professional (in *R. v. Bousquet*, Oct. 14th) Sir Henry Curtis In an application to the Court of Criminal Appeal

"Punch-drunk" Boxer's Plea of Insanity

amputation. The judge at assizes was apparently wrong in thinking that the girl's estate could recover damages on the basis of a normal expectancy of life after the sum of £400 would be enough for those 48 hours. before she died and the judges held that the nominal £500 to £400. The girl had lost her leg only two days Appeal cut down the first £500 to £200, and the second life as a woman with only one leg. The Court of damage she would have suffered in going through the loss of the limb, and £500 for the more remote sentatives £500 for her pain and suffering and for

Cancer of the Uterine Cervix.—Figures are now available of over 1000 cases of cancer of the cervix treated more than five years ago, and some interesting comparisons are possible. Presumably in future years survival tables will be supplied such as have recently been recommended by the League of Nations Health Organisation as a result of the inquiry made by a committee of experts under the chairmanship of Prof. James Heyman. Tables of this sort are now prepared by nearly all research centres.

Cancer of the Uterine Body.—Most centres mention that hysterectomy remains the method of choice for early cases. It seems possible, however, that in the future a combined treatment by radium and X ray may replace surgery except in very favourable cases.

Ovar Cancer.—This section includes reports from two hospitals where one-gramme units are in operation. The Middlesex Hospital states, "The teloradium unit has continued to prove its usefulness. . . . Quite apart from the curative value, which cannot be assessed until after a period of years has elapsed, it is a method of therapy which is more convenient and associated with less danger to the staff than is the case when large moulded applicators are used." University College Hospital point out the difficulty of so arranging the ports of entry that an adequate tumour dose is obtained, and believe that the solution of the difficulty lies in the direction of increased radium skin distance with the corresponding increase of radium element. The survival rate of cases of cancer in the oral cavity treated more than three years ago tends to be disappointing.

Cancer of the Rectum.—An interesting description is given of the technique in use at St. Bartholomew's Hospital for cancer of the posterior wall. This consists of perirectal needles passed through the perineal skin, and an ingenious arrangement of intracavitary radium on a rubber plaque pulled up by means of a tube passed through the colostomy opening. It is generally believed that radium gives negligible results in the treatment of rectal cancer, but although the percentage of survivals is low the figures show that it is possible to cure the condition even when radical operation cannot be performed.

Sarcoma.—One or two cases giving a favourable response to radium therapy are quoted, but the difficulty of accurate diagnosis, and the poor results in the proved cases of sarcoma of bone, suggest that detailed analysis is necessary before any conclusions can be drawn as to the value of irradiating the various forms of tumour derived from the mesoblastic elements.

Biopsy.—Workers at the Bland Sutton institute of pathology at the Middlesex Hospital have been making routine confirmatory diagnoses of the presence of growth, with analysis of the portion of tissue for section has been removed after electro-coagulation of the area, and such material is said to give reasonably good histological preparations. The advantages of this procedure include the following: (1) any possible risk of dissemination of the growth by the biopsy is minimised; (2) it is more likely that an adequate piece of tissue will be removed. Excellent micro-

public cinemas when the man, as sometimes happens, is "wanted" for another serious offence after his release from serving his sentence for an earlier crime. Nor is this all. It is said to be the experience of the police that a criminal, when caught, will sometimes volunteer a frank confession to assist the cause of justice or to relieve his own conscience, yet will afterwards repudiate his confession or will falsely allege that it was extracted from him by "third-degree" methods. The New Jersey police have the idea of using the sound-recording film, along with the ordinary cinematograph film, to record the confession at the moment when the criminal is in the mood to tell his story. If the record can show him making his statement voluntarily, deliberately, and at his case, if it can show the police giving him a proper caution and warning him that his statement may be used against him, and that he must expect no advantages from it, then it may some day be available to negate a sudden and unsupported allegation that the man was "beaten up" or unfairly forced to confess. It may be doubtful whether we shall adopt this idea in England, but the proposal is interesting. The recent Inter-State Conference at Trenton indicates that Americans are at last being stirred to some active step to put down crime. The proposed system of Inter-State compacts to avoid awkwardness on State boundaries will recall the authorities to avoid unfortunate incidents on their boundaries in connexion with motor-ambulances and traffic victims. In America the question of crime in relation to State boundaries could best be solved by Federal legislation. This, however, might require a new amendment of the United States Constitution, and at the present moment Federal intervention in State matters is far from popular.

MEDICAL USES OF RADIUM

The research centres throughout the country to which radium has been lent by the Medical Research Council submit reports this year showing good progress and evidence that much thought is being given to improvements in technique. We select from the reports some items of special interest.

Cancer of the Breast.—The surgical unit of St. Bartholomew's Hospital makes an interesting statement concerning the comparative results of surgical operation and radium implants in the treatment of breast cancer. Examination of the five-year survival rates obtained by very careful follow-up shows that the results for the two methods of treatment are not materially different, being in each case 40 per cent. Since the new form of treatment did not prove superior to the old, it was decided to attempt improvement by combining interstitial radium with surgery, the breast being first implanted with radium needles and subsequently excised. It is hoped that by this autumn a special histological study of 50 cases treated by this method will have been completed, and the next report will contain an account of these. Birmingham General Hospital, where many breast cases are treated radiologically, the Marie Curie Hospital and the Middlesex Hospital, all mention the use of X ray therapy either to supplement or to replace radium, suggesting that all are finding here a satisfactory line of advance.

not exist. But the surplus of useless over useful articles can only be compared, he feels, with the surplus of failures over successes in human reproduction—a comparison which might be a little discouraging to medical authors, did he not also point out that both the fertilising spermatozoon and the fertile new idea would never have appeared if a clean sweep had been made of all germ-cells and all ideas. One of "Brian's" complaints is that the interest attaching to medical articles is too fugitive and ephemeral. Who wants to know that a louse may make a guinea-pig epileptic? It is a matter interesting only the readers of a less degree, the house. He thinks the reader's task would be much facilitated if only the author would condescend to summarise the gist of his paper in a few lines. But a summary is apt to be deservedly banal; the author prefers it only grudgingly, feeling that no summary can do justice to the wit and wisdom to be enjoyed by the conscientious end-to-end reader. The late Dr. Slosson once wrote that 90 per cent. of the manuscripts he had handled in twenty years as an editor would have been improved by cutting off the first page or paragraph. If manuscripts were thus to be handled in rotation by one member after another of the editorial staff of a journal, only the summary might be left, and readers like "Brian" might have their hopes realised and succeed in keeping abreast of the times.

(FROM OUR OWN CORRESPONDENT)

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

EDINBURGH UNIVERSITY

Field-Marshal Viscount Allenby was last week elected rector of Edinburgh University for three years, in succession to General Sir Ian Hamilton. The election was accompanied by the traditional fight in the Old Quadrangle. A feature of the election was the support given to Dr. Chalmers Watson by students who sympathise with his views on the reform of the medical curriculum. The voting was carried out on the proportional representation basis, and after the votes for the Marquis of Douglas and Clydesdale and Mr. C. M. Griever had been distributed, the final count was: Lord Allenby, 1017; Dr. Chalmers Watson, 916. At a recent meeting of the university court it was announced that the Rockefeller Foundation had made a grant of £1500 to the department of medical chemistry, to provide for the expenses of Prof. Barger's work in vitamin B₁ for a period of three years from (October, 1935. Intimation was received of the resignation of Dr. A. E. Barclay, lecturer in radiology, and it was agreed to appoint Dr. Robert M^rWhitter to the lectureship in his place.

The future of voluntary hospitals in Scotland was discussed last week at a meeting in Edinburgh of the Committee on Scottish Health Services. It was submitted by witnesses on behalf of the voluntary hospitals that their future depends on the attitude of the State and local authorities towards them during the next five years. Voluntary hospitals had approved the provisions of the Local Government Act, but its working had not been satisfactory. The local authorities had not proceeded on the principle of co-operation. It was urged that the voluntary hospitals should be officially recognised by the State as an essential factor in the health services, and that

Not long ago I wrote about the gesture made by a French medical society, which decided to reduce medical fees by 10 per cent, as part of the national movement towards a lower cost of living. This move has not won all the support it perhaps deserved, and replies to a questionnaire by the Confédération des Syndicats Médicaux suggests that roughly 40 per cent. of the members are hostile to all reductions whatsoever. The remaining 60 per cent. favour some system of reducing charges, but do not agree about the form it should take. It is felt that if the 10 per cent. cut is applied to a 15-franc consultation in a surgery, the doctor will collect a rather ragged sum which includes odd centimes. This is only one of the many little difficulties which have cropped up during the discussions. But while the medical profession has been debating the matter in an academic spirit as could be generated in a rather mundane atmosphere, the Minister of Public Health, Monsieur Laroze, has asked for tangible proof of the profession's willingness to fall into line. He has addressed a circular to the prefects throughout France requesting them promptly to summon the representatives of the local medical societies, and to learn what measures they propose to take to reduce medical charges. References to this action in the medical press suggest that behind the Minister's thirst for knowledge there may be an administrative rod in pickle.

(FROM OUR OWN CORRESPONDENT)

The present wretched quality of French bread was again discussed at a meeting of the Academy of Medicine on Oct. 8th when the Bread Commission presented a report which was a model of plain speaking and an endorsement of the resolution recently adopted by the Pharmaceutical Society of Paris. The Commission duly pointed out that while the farmers are organised in one trade-union, the millers in another, and the bakers in a third, there is no such thing as a bread-eaters' trade-union. This is a great pity not only for the unorganised bread-eaters but also for the said farmers, millers, and bakers, who have long suffered from an unofficial strike of bread-eaters, carried on more or less unconsciously. In an attempt to mend matters the Confédération des Syndicats Médicaux has arranged with the Bakers' Union for the sale from Oct. 20th to Dec. 15th of "bon pain" made of exclusively French flour containing 11-12 per cent. of dry gluten. In each arrondissement of Paris one baker's shop has been selected for the sale of this bread.

FURTHER CRITICISM OF MEDICAL JOURNALS

A correspondent in *Concours Medical*, signing himself "Le Maitre," addresses himself a little plaintively to the弊弊's medical journalism. "The functions of the弊弊's, believes, are to offer authors the opportunity of publishing their views, and to provide printers with a livelihood. All of which is most laudable, but the弊弊's, however, is not to be confounded with a livelihood, and is also unthinkably

a thoroughly representative organisation should be set up to bring them directly and officially into touch with the Department of Health for Scotland. The witnesses stated that the inadequacy of medical attention at home added greatly to their work, especially for children.

This whole subject bristles with difficulties. Local authorities are at present attempting to construct hospital services which will equal those provided by the voluntary hospitals. If the voluntary hospitals are able to maintain their present standard of efficiency, they are likely to remain the centres of the profession in Scotland. It is arguable that the State or local authority should see that the efficiency of the voluntary hospitals does not suffer from lack of funds. Any attempt, however, by the local authorities to control the management of the voluntary hospitals is bound to meet with strong resistance.

VIENNA

(FROM OUR OWN CORRESPONDENT)

FEWER MEDICAL GRADUATIONS

The report of Vienna University for 1933-34 shows

for the first time since the war a distinct and constant fall in the number of students qualifying for the M.D. In 1913-14 the number of female and male students promoted to that degree was 385. When peace returned there was a rush of students whose studies had been interrupted and the figure went up to 521 in 1920, and rose steadily to 743 in 1924-25. After this, for quite a while it remained fairly stationary at about 600. In 1932-33 it again reached 521, and in the following year 442. According to calculations the final figure for 1934-35 will not exceed 420. But already an increase in the number of medical students has been announced again this winter term, for over 1500 have applied for admission to the courses. This is somewhat unexpected, for the lowering of the practitioner's income and general standard of life is so vitally manifest that one would have thought young men would be very unwilling to take up this profession. The only explanation one can think of is that the outlook is just as bad in all the other "intellectual" occupations, and that many a youth, thinking that times may change before he is through with his studies, goes in for medicine because nothing better opens before him in this country.

MARRIAGE AND PROGENY IN AUSTRIA

The Vienna board of health publishes some interesting statistics of the ages of men and women at marriage. A period of ten years has been chosen for fair comparison, and it is found that of all the men married during that period only 0.1 per cent. were under sixteen and 6 per cent. were under twenty. In the age-group 20-25 we find 8 per cent. of the male partners and 25 per cent. of the females. The next five-year age-group, 25-30, shows nearly 50 per cent. of males and 40 per cent. females. Thus pass the thirtieth year of life, and the most favoured age is 25-30 for both sexes. After this the frequency of marriage quickly diminishes, for we find only 1.5 per cent. of men marrying between fifty and sixty and only 0.7 per cent. above the latter age. With the women, the figures were: 0.5 per cent. married

between fifty and sixty, 0.2 per cent. between sixty and seventy, and less than 0.1 per cent. after that. As a rule there is a difference of about five years between the ages of the bride and bridegroom in the favoured periods of marriage: 65 per cent. of all brides belonged to the age-group 20-30, and just as many men in the age of 25-35. Within the last five years the average marriage age has gone up, especially in the rural districts, where as a rule the couples are mostly older than in towns. This is perhaps due to the feeling of the rural population that there is nothing blameworthy in a young woman having an illegitimate child. The parents are in no hurry to marry, and indeed may later marry other partners, no blame being attached to the woman.

The Board of Health's report also gives information about the relative age of parents and children. Of all children 45 per cent. were born within the first ten years of matrimony, and 10 per cent. within the first three years. In 5 per cent. of the births the mother was over forty (no figure is given here for the fathers' age). About 1.5 per cent. of the children had fathers over fifty (the age of the mothers is not stated). It is interesting that 0.5 per cent. of the births took place twenty years or longer after the marriage. The oldest mother within the period of observation was 49½ at the time of her baby's birth, the oldest (supposed) father 72. Altogether the number of couples without children is growing rapidly and alarmingly in the towns, as everywhere in Europe. The decline of the births is over 50 per cent. in the last decade. It may be added here by 15 per cent. so that relatively these are going up.

DEATH OF PROF. PAUL

A few days ago Dr. Gustav Paul, formerly director of the Federal Vaccination Institute, died at the age of 76. He was a native of Prague (then an Austrian city), and soon after his graduation was appointed assistant at the Medico-forensic Institute there. He then served in the public health department of the Ministry of the Interior, and in 1895 took over the charge of the new institute in Vienna for producing vaccination lymph. He was the discoverer of the correct test for the early diagnosis of small-pox, and the modern equipment of the institute and its excellent organisation are entirely due to him. He also originated the therapeutic use of lymph for cutaneous therapy of chronic rheumatism, which is much used in Central Europe.

NEW HOSPITAL FOR ILFORD.—The Ilford council have accepted a tender from the Essex county council for the site of the old Ilford pumping station on which a new hospital is intended to serve Barking and Dagenham, leaving the King George Hospital to provide for the northern area.

KING EDWARD VII. HOSPITAL, WICKSOM.—This hospital is starting a contributory scheme, to which members are to contribute a shilling a week and in return receive a sum not exceeding £28 a year in any twelve months towards the cost of hospital or nursing-home treatment for themselves or for their wholly dependent relatives. So long as accommodation is available they will be received at the King Edward VII. Hospital in the private wards, but if this is not possible they will be able to make arrangements with another hospital or nursing-home. Applicants over sixty years of age will not be admitted, and the scheme does not provide for treatment of any notifiable disease, or for maternity or chronic cases.

PANEL AND CONTRACT PRACTICE

Group Practice in America

The problems of medical practice in America appear to resolve themselves into two: (1) How can medical care be made more efficient and free from fee-splitting and other stigmata of commercialism? (2) How can such care, with adequate remuneration for the doctors giving it, be brought within the economic resources of the poorer members of the community? For the solution of the first problem Dr. Hugh Cabot in his recent book *“Favors an extension of group practice, which is now increasing in America. The first group, and of course the most outstanding, is the Mayo Clinic, which began in 1887, and there are now about 150 groups covering a very wide area. The group includes general practitioners and specialists with laboratory aids working as a medical and financial unit, the fees being paid not to the individual doctors but to the group. There is a growing tendency to extend the facilities afforded by the group to isolated practitioners in country districts, and so enlarge the group's area of influence. The group is in fact an example of evolution by differentiation and integration.”*

The second problem presents, perhaps, more formidable difficulties. Compulsory health insurance has been suggested as a solution, but Dr. Cabot, though alive to the advantages secured in Europe, and especially in this country, by this measure, is doubtful whether it would succeed in America. Fifteen years' experience of prohibition does not encourage him to view with approval any further attempts to impose compulsion on a large scale on the American people. Moreover, he attributes the success of the British health insurance system largely to the fact that it is administered by officers trained in public administration whose appointment and tenure do not depend on political influence, and he can see no adequate body of such administrators in his own country. He favors a development of voluntary insurance, particularly the insurance now offered by some of the groups, an extension of the medical care now provided by many large employers, and a definite assumption by the State of responsibility for the provision of medical care for the indigent—is fulfilled very imperfectly or not at all. He feels strongly that something effective ought to be done, and dissents from the view apparently taken by “organized medicine” in America—the Christian Science view that the difficulties of providing adequate medical care are imaginary, and that the doctors may safely, in the words of Mr. Dooley, “turn the job over to Destiny.”

In other respects too Dr. Cabot's book may well be studied by all who wish to come to a right understanding on the proper relation of doctor and patient in this country, for during the late war he commanded a British base hospital. His recollections go back to the last decade of the last century, the heyday of the family doctor, when people lived in smaller communities, where the local doctors knew every member of the families they attended and acquired a fund of information on family characteristics that was of great help in diagnosis, prognosis, and treatment. He tells how some 35 years ago he assisted at a consultation attended by three Harvard professors.

Conflicting Tribunals

A case noted under this heading (Oct. 19th, p. 920) has had a sequel in the Courts when an action by the father of the deceased girl against the insurance practitioner concerned was heard. The case for the plaintiff ran into part of two days, but the judge stopped the case without calling on the defence as no cause of action had been disclosed and he was satisfied there was no cause for complaint against the doctor. The facts of the case were simple. At 11.30 p.m. on a certain Friday the insured person was suffering with acute pains in her stomach. The pains and vomiting became worse and the services of the doctor were sought some time after midnight. The doctor did not visit the patient but gave the father a small bottle of medicine, prescribing the dose, and indicating that the girl should be seen on the following morning. By 7 a.m. the girl was definitely worse and the doctor was again called. On this occasion he examined the girl and telephoned for an ambulance to take her to hospital where an immediate operation was performed. She died early on the following day, the cause of death being (a) heart failure due to toxæmia, (b) general peritonitis due to (c) perforated duodenal ulcer. The doctor's statement was that he had treated the girl for indigestion and severe constipation a few months previously and thought it was quite possible that she was

after mature consideration had arrived at a favorable prognosis it occurred to one of them to ask the views of the family doctor. “He remarked tersely that the patient was a Jones before she married; that Joneses who showed abdominal distension on the fourth or fifth day of pneumonia died; and that she would die within the week. She did.” But such intimate knowledge of family peculiarities has, Dr. Cabot thinks, become practically impossible in these days with the rapid shifting of population and the increasing reliance of the public on specialists. In America specialism is far more developed than in this country; in some large cities over 60 per cent. of the practitioners are engaged in some form of special practice. In certain quarters this development is deplored as undesirable and unnecessary. The American Medical Association have apparently accepted the proposition “that more than 80 per cent. of all the ailments for which people seek medical aid can be treated most cheaply and most satisfactorily by a family physician with what he can carry in a hand-bag.” From this proposition, or dogma as he calls it, Dr. Cabot dissents; it seems to him to clothe the overworked general practitioner with powers beyond the capacity of the human mind. He thinks that the immense advances in knowledge and technique of the last 20 years have made specialist services necessary over a very wide field, which is likely to expand with further advances. He is, however, aware of the evils of specialism under commercialised conditions of practice, which, it appears, is prevalent in some parts of America. Dr. Cabot tells of a questionnaire on the subject addressed to 105 doctors, not members of the local medical society, of whom 57 replied that they were in favour of fee-splitting, and 48 that they were against it. He thinks the practice is increasing and that the profession must either destroy it or be content to be destroyed by it.

1 The Doctor's Bill. By Hugh Cabot, C.M.G., M.D., a senior consulting surgeon in the Mayo Clinic, New York: Columbia University Press, 1935. Pp. 313. 15s.

such applications. For instance, the Joint committee in view of the fact that they have no right to refuse and see the patent early on the following morning. In some cases, the committee is so small that it is difficult to get a quorum. The father did not suffer from a similar attack. The father did not in any way convey to him the impression that his daughter was seriously ill, and appeared quite satisfied when he left the house with the medicine. According to the doctor he told the father that he would call and see the patent early on the following morning.

On and Off the Medical List

An insurance practitioner whose name was removed from the medical list of an insurance committee as from a date in 1924 now desires to secure readmission to the list in another area. He has applied to the Minister of Health for the restoration of his name, and in accordance with custom the Minister has invited the views of the insurance and panel committees before he accedes. The doctor has produced testimonials on his behalf from medical practitioners have informed the doctor accordingly.

Gi

A Kentish doctor who was surcharged 10*l.* for the supply of 1 oz. of gin in mixture to an insured person has appealed against the decision. In entering her appeal she submitted that the mixture supplied is a recognised formula in the treatment of insomnia in cases of pulmonary tuberculosis. The insurance committee have informed the panel committee that in their view the order for gin was not necessary, inasmuch as it was open to the doctor to order an official preparation which would have produced a similar effect.

PUBLIC HEALTH

Puerperal Pyrexia

"The decision taken nearly ten years ago to make puerperal pyrexia compulsorily notifiable was bound to bring several administrative problems in its train. For the first time a symptom rather than a disease was included in the list of conditions which must be notified to the medical officer of health, and this has not yet been fully realised by many practitioners. The definition of puerperal pyrexia as contained in the P.H. (Notification of Puerperal Fever and Puerperal Pyrexia) Regulations, 1926, is quite clear and cannot be too often emphasised; it is—

"any condition (other than puerperal fever) occurring in a woman within 21 days after childbirth or miscarriage in which a temperature of 100·4° F. or more has been sustained during a period of 24 hours or has recurred during that period."

The practitioner is not required to make a diagnosis as to the cause of the fever; the fever by itself renders the case notifiable.

The question is immediately asked: "Is notifiable pyrexia limited to the puerperal period?"

No. 51, 1934).

The patient is situated "within which (the notifying practitioner) is attending such woman." This was done in order to correct the anomaly of cases being primarily notified to the medical officers of districts far away from where the confinement took place and infection occurred, and it covers such cases as the large group who are confined in central institutions out of the area in which they reside and those who "go home to mother" for their confinement. An exception was made in the case of London, where cases arising in a hospital must be notified to the medical officer of the borough from which the patient was brought into the hospital. This was done in order to abolish the previously existing discrepancy between notification of puerperal fever and puerperal pyrexia. Cases which are brought into a district for treatment in a hospital after notification elsewhere, like all other notifiable infectious diseases, should not be re-notified or included in the returns of the district (R.G.'s Circular No. 51, 1934).

area "with which the place of residence of the ward blocks. The extension provides for a main corridor with seven 54,400 have been accepted by the asylum committee. Plans for an extension to this hospital which will cost £12,000 have been accepted by the asylum committee. FIRE AND KIBROSS JOINT ASYLUM, CUPAR.—To whom should notification be made? The rules governing this were altered somewhat by the amendment regulations of 1928, in which the original notification to the medical officer of health of the area "with which the place of residence of the ward blocks. The extension provides for a main corridor with seven 54,400 have been accepted by the asylum committee. Plans for an extension to this hospital which will cost £12,000 have been accepted by the asylum committee.

CORRESPONDENCE

THE INDEPENDENT MIDWIFE

To the Editor of THE LANCET

Sir,—All who are interested in the practice of midwifery will thank you for the informed and sympathetic leading article on the independent midwife which was published in your last issue. The wife were emphasised in the report of the joint Council, to which reference is made in your article, and the data given by Lady Forster in her *Lyness-Clinton* lecture furnish convincing proof of the severity of these difficulties. Notwithstanding the drive to hospital which has been going on in recent years, domiciliary midwifery is still, and will probably remain, the basis upon which an organised maternity service must be built up. Midwives attend approximately 60 per cent. of all confinements in this country, and their work is done almost exclusively in the homes of the industrial classes. They therefore constitute a highly important unit of the maternity service as it exists at present, and it is an interest, not only of the medical profession, but also of the public, that their work should attain a high degree of efficiency. Midwives who are working under conditions of economic hardship, or even as we now know of actual privation, cannot give of their best, and it is unquestionable that suitable measures to improve their lot are long overdue.

Recent utterances of the Minister of Health suggest that the Government intend to establish a salaried service of midwives; this will provide full employment, adequate emoluments, and security for those who enter it. Unfortunately the number of midwives practising is considerably in excess of the number actually required; consequently a choice will have to be made and those who do not enter the salaried service will, if they remain in practice, be exposed to the existing economic difficulties. The problem of how to improve the lot of this remainder is both complex and difficult. It should, however, be borne in mind that not all of them are entirely dependent for a livelihood on what they earn as midwives. An unspecified proportion of them are "part-time" midwives, who have other means of support, and sometimes follow other occupations when not actually engaged in maternity work. There is much to be said for the view that a midwife's work should always be a "whole-time" job; she will not do her best unless she is in it heart and soul, nor can she maintain her professional efficiency if there are long or frequent intervals in which her attention is turned to other pursuits. There is reason to believe that many part-time midwives turn to other occupations because they cannot get enough cases to earn a livelihood, but many others are part-time midwives from choice, and take cases only as a means of earning a little extra money when required.

The liberty which midwives now possess to regard midwifery as a subsidiary interest, and not as a serious profession which demands their whole attention, is an anomaly which is detrimental to the interests both of the public and of themselves. It may be difficult to end this anomaly at a stroke, but it is inconceivable that it should remain as a permanent feature of our midwifery system.

I am, Sir, yours faithfully,
T. WATTS EDEN.
London, W., Nov. 14th.

To the Editor of THE LANCET

Sir,—The Midwives' Institute has agreed in principle with the establishment of a service of salaried midwives, but it has always realised that, if such a service is to be successful, the competent midwives now in practice must be retained so far as is possible. The returns for the questionnaire sent by the Institute to independent midwives, and ably reviewed by Lady Forster in a preliminary survey at the *Lyness-Clinton* lecture which you discuss in your leading article of Nov. 2nd, do in fact show that the middle-aged private midwife is the stand-by of the mother, especially in urban areas, and as is well known her records are for the most part excellent.

It has to be recognised that until schemes can be devised to make recruitment to the midwifery service an attractive and permanent profession to young well-educated women, both by regulation of the number of entrants and the provision of a longer and better training, both expediency and justice will be best served by making full use of the most experienced of the present-day midwives. It also needs to be realised that the midwife who is employed as a full-time worker requires adequate pay; her expenses which must be incurred in connexion with her profession are considerable and include the provision of uniform, apparatus, telephone, and suitable domestic help. The Institute is making further detailed inquiry into the cost of these items, but it is certain that the midwife's salary should not, on the above grounds alone, be in any case less than that now given to health visitors; and further, in assessing salaries above the minimum, the greater responsibility of the midwife should be taken into account.

The Midwives' Institute, although it holds fast to the conviction that the midwife must always hold full personal responsibility for her own part of the work, requires the close co-operation of doctors and midwives.

I am, Sir, yours faithfully,
E. M. PEE,
President, the Midwives' Institute,
57, Lower Belgrave-street, S.W., Nov. 14th.

THE TOXÆMIA OF BURNS

To the Editor of THE LANCET

Sir,—Patients who die during the first four days following the infliction of a severe burn are generally debilitated to that notorious and all-pervading entity known as "toxæmia," the Atlas or Hercules of surgery and midwifery, on whose broad shoulders is placed responsibility for nearly every catastrophic not clearly due to a known deadly agent. With the adoption of the tannic-acid treatment of burns by E. C. Davidson, of Detroit, in 1923, the percentage of deaths in the stage of "acute toxæmia" fell significantly; an improvement ascribed, quite justifiably, to the coagulating effect of tannic acid on soluble protein, resulting in less absorption of some toxic and supposedly albuminous substance dissolved and possibly denatured. It is stated in the *Medical Research Council's* special report (No. 141, p. 10): "No antitoxins (to these toxic substances) are produced." Sepsis, in these cases, is yet to be controlled, as the same report admits in the con-

cluding paragraph: "Further therapeutic advances will follow the lines of simplifying and shortening the methods for inducing coagulation, and of more efficiently preventing and controlling sepsis." In the absence of sepsis, the M.R.C. authorities seem to imply, there can be no toxæmia due to bacteria; the first four days' sickness, they conclude, is too early for any possible bacterial action.

It occurred to me that a proportion of the cases dying of "acute toxæmia" during the four dangerous early days might be accounted for on the assumption that their symptoms were due to the absorption of staphylococcal toxin. This theory I have not yet had the opportunity of testing on any effective scale, but I think it worthy of consideration. One case of an adult whom I had treated for an independent condition with a long course of staphylococcal toxoid injections fell and was dragged while playing polo and sustained a very extensive graze, including the skin over nearly the whole of his back and shoulders. This healed without any signs of sepsis or toxic absorption—a most unusual result. More important, Prof. R. Cruickshank (Jour. Path. and Bact., Sept., 1935, p. 367) found *Streptococcus hemolyticus* in the skin of half his burn cases on the second day; *Staphylococcus aureus* was also frequently present, and *Staph. albus* in 56 per cent. of cases on the first day. Staphylococcal toxin can be produced in the body very rapidly, and its effects may not be preceded by any display of "sepsis," as the Bundaberg disaster taught us. I suggest that every case of severe burn should receive intravenously, at the earliest possible moment, an injection of staphylococcal antitoxin amounting, for an adult of normal size, to at least 5000 international units. I believe it is the practice in some hospitals to give staphylococcal antitoxin prophylactically; the staphylococcal antitoxin could be combined with this.

People constantly exposed to the risk of sepsis, by nature of their employment, could be treated prophylactically with a course of staphylococcal toxoid injections.

I am, Sir, yours faithfully,

FRANK MARSH.

Pathological Laboratory, c/o Anglo-Iranian Oil Co., Ltd.,
Maslami-Sulaiman, via Ahwaz, South Iran, Oct. 20th.

BREATHING EXERCISES IN ASTHMA

To the Editor of THE LANCET

SIR,—My attention has just been called to an article by Dr. J. L. Livingstone in THE LANCET of Sept. 28th entitled the Value of Breathing Exercises in Asthma. I feel bound to add from first-hand knowledge some facts to his account. I was chairman of King's College Hospital from 1929 to 1933; as over a long period of years Miss Seyfang had effected complete and lasting cures for asthma for many of my relatives and friends by means of breathing exercises, and as she was perfectly willing, indeed anxious, to place the exercises that she had devised into a system after years of study and training at the disposal of the medical profession, I suggested to Dr. Livingstone that she should work in the Asthma Clinic at King's so that her methods could be observed and the results tabulated. This was arranged, and as a consequence Dr. Livingstone told me himself that he had never before seen anything to approach the successes obtained by the exercises. Unfortunately in arranging for their extension he took the view that no training was necessary in them for the giver. They were incorrectly given in con-

sequence, and as any failure would then have been attributed to Miss Seyfang's system she, with my approval and indeed at my advice, ceased to give her services. She had given them for nearly two years on a purely honorary basis and with undisputed success. Dr. Livingstone says in his article "differed only in detail" from those already known. I cannot recall that any breathing exercises for asthma were successfully used at King's before her advent, and in any case surely that remark is equivalent to a practitioner saying that he knew that a certain cure was good for a certain disease but that he did not know, in detail, what the prescription should be. Miss Seyfang has never complained of the ungenerous treatment she received, but has continued her extremely successful work in her own clinic, and has earned the lasting gratitude of all who have been to her.

I am, Sir, yours faithfully,
GORELL.

31, Kensington-square, W., Oct. 31st.

QUININE AMBLYOPIA

To the Editor of THE LANCET

SIR,—As cases of quinine amblyopia are rare in this country, the enclosed picture of the left fundus of a patient's eye may be of interest to some of your readers. The disc is atrophic, and some of the arteries have become thread-like, while the visual fields were contracted peripherally. In spite of these changes, after a few injections of strychnine, the patient got full vision with glasses for a small amount of myopia.

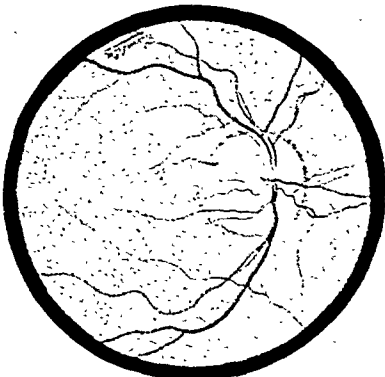
The patient was seen for Dr. G. Hume (who was away), and the history was that after being away from white people for two years, doing administrative work among natives in Africa, he developed obsessions and, being invaded home, tried to end his life by taking 60 grains of quinine. He went blind and deaf, but when I saw him sight and hearing had somewhat recovered. He was 26 years of age. The cerebro-spinal fluid was normal, but the blood gave a very faint Wassermann reaction, which was not confirmed later. As the fundus, visual fields, and history are typical of quinine poisoning, and there were neither history nor signs of syphilis, that can be excluded.

My friends in the tropics tell me that 15 grains of quinine sometimes make patients uncomfortable. My chemist-patients and friends here tell me that women try it as an abortifacient, but generally get frightened and give it up on the first signs of giddiness, headache, dizziness, or interference with their sight—symptoms which may be produced by doses of 15-30 grains.

I am, Sir, yours faithfully

Harley-street, W., Oct. 29th.

SYDNEY TIBBLES.



radiograms may however show points of great importance in suspected malignant conditions—e.g., the presence of encapsulation and of metastases in the axilla. The detection of metastases in rib is mentioned, but these must be rare in cases which still present any difficulty in diagnosis. It is claimed that X ray examination gives information which would in its absence be obtained by repeated palpation, a procedure believed by many to involve the risk of disseminating malignant cells in the lymphatics. Even though the diagnosis of malignancy at a really early stage remains unsurmountable without histological examination, in doubtful cases X ray examination may offer some support to a diagnosis, positive or negative, founded on clinical signs. In women over forty, moreover, the presence of well-marked mastoplasia or cystic disease is in any case coming to be regarded as an indication for local amputation, and radiological evidence that such a condition is actually present allows the clinician to advise operation with more confidence. In cases of abscess of the breast it may be useful to ascertain the size and extent of the lesion. In malignant tumours the demonstration of axillary metastases at a palpable stage must lead to careful consideration of the rival claims of operation and radiotherapy. It follows that even in cases where the diagnosis is not in doubt there is something to be said for investigation of the tumour by X rays. The reproductions of the radiograms selected by Ritvo and his colleagues to illustrate their article suggest, however, that their interpretation may be a difficult matter even for the expert.

THE COURSE OF RHEUMATIC HEART DISEASE

THE natural history of a chronic disease such as rheumatic fever is difficult to ascertain with any precision. It is known to be a disease of which the initial manifestations occur mostly among school-children or young adults, and to leave permanent cardiac lesions which shorten life. The only way to determine the common course of the disease is by following a large number of cases from initial infection to death, an arduous task which has been accomplished by A. C. De Graff and C. Ling,¹ working in New York. They noted in a group of 644 patients the average ages of onset of important phases of the disease, notably initial infection, 17 years; first symptoms of cardiac insufficiency, 28 years; first appearance of heart failure, 30 years; death, 33 years. Thus the average patient had an economic life of only 11 years—the period between first infection at 17, and the first symptom of diminished circulatory reserve at 28.

The records of this same group of 644 patients were analysed to discover how the course was affected, if at all, by the various valve lesions. The effects proved to be slight; but in the presence of tricuspid or pulmonary lesions, and also with isolated mitral insufficiency, the outlook was slightly less favourable than with other valve lesions. The addition of aortic incompetence to mitral stenosis had no effect on prognosis as compared with mitral stenosis alone, though cases of aortic lesions alone were at a slight disadvantage in comparison with mitral stenosis. The incidence of congestive cardiac failure was high, being higher the greater the number of valves affected; with aortic lesions alone, more than one-third of the patients escaped it. The conclusion drawn from these results is that valve lesions are of very little importance in prognosis. De Graff and Ling have also tried to estimate the

influence of auricular fibrillation on the course of rheumatic heart disease. Among these 644 fatal cases this arrhythmia had occurred in 43 per cent., and a comparison of the cases with and without fibrillation is interpreted as showing the irregularity, per se, to have no effect on prognosis. It is a complication of a late stage of the disease, and when it shows itself the course of the disease is nearly run. According to this view auricular fibrillation is the result of long-standing cardiac lesions, but does not cause any further appreciable impairment of the circulation.

PYURIA IN CHILDHOOD

THE apparent increase in the incidence of pyelitis in childhood is a phenomenon which many experienced physicians have observed without being able to explain. E. Holzmänn² has recently made some observations which may provide a clue. Though pyuria is not usually considered to have any close association with infections of the upper respiratory tract, the part played by tonsillar disease in the aetiology of nephritis is clearly recognised. Droplet infection of the upper respiratory tract is regarded as the most important source of disease in childhood. Holzmänn records instances of pyuria definitely associated with acute tonsillitis, and also reports one case in a girl of 6 years where removal of the tonsils caused the prompt disappearance of a chronic pyuria. He also comments upon the duration of attacks of pyuria, claiming to have collected evidence in support of the theory of a seven-day cycle. In children the tendency for a febrile illness associated with pyuria to come to an end on the seventh, fourteenth, twenty-first, or twenty-eighth day of illness has, according to this view, to be considered before any special medicament is given the credit for effecting a cure. Throughout Holzmänn's paper he is careful to use the term "pyuria" without any closer designation of the underlying pathological process present, and he does not indicate the amount of pus in the urine that would in his opinion justify the diagnosis. A. B. Helper and R. T. Scott have recently³ set out to determine what constitutes a pyuria of clinical importance, and what is its significance when it is encountered in an ordinary routine examination. They have investigated the urine of all children on their admission to an orthopaedic hospital over a period of nine months; a voided specimen of urine was examined both before and after centrifuging. If there was pus in any appreciable amount the patient was catheterised and the urine again examined before and after being centrifuged. If pus was then found a full investigation of the genito-urinary system was then carried out. Nearly 700 children came under review, and the first fact of importance discovered was that pus cells could be demonstrated in 99 per cent. of the ordinary voided specimens of urine after this had been centrifuged. Catheterisation reduced this number to 13 per cent. Altogether 66 children were detected by this means as having pyuria in need of a fuller examination; 26 of them were found to have disease of the urinary tract such as hydronephrosis, congenital valve of the urethra, and neuromuscular incoordination of the bladder mechanism; 13 of these having pus cells in the urine only in amounts well under what is quoted in the literature as a "normal" pus content. It is suggested therefore by Helper and Scott that the amount of pus present is no guide as to the necessity for cystoscopy or other forms of examination. In children with similar

¹ Amer. Heart Jour., 1935, x., 459 and 630.

² Dent. med. Woch., August 23rd, 1935, p. 1352.

³ Jour. Amer. Med. Assoc., August 17th, 1935, p. 499.

lesions, counts per high-power field in dry preparations varied between 1 and 20. Since many of the congenital anomalies of the urinary tract are "silent" in the early phases it is urged that it is a greater error to ignore a few pus cells in the urine than to submit a child with such a slight degree of pyuria to an unnecessary series of tests. The study also serves to emphasise the need for catheterisation before any real significance can be attached to the presence of pus cells in the urine. Even in boys, after thorough cleaning of the glans and prepuce, evidence of contamination was encountered. It is also clear that much of the disagreement in the literature as to what may be regarded as the normal number of leucocytes or pus cells in the urine is due to varying methods of collecting and examining specimens. Pending agreement upon what constitutes a pyuria the main deduction to be drawn from the study by Helper and Scott seems to be that the presence of even a few pus cells calls for careful scrutiny of the whole clinical picture.

TEST FOR THE COMPETENCE OF THE LUNGS

No surgeon would think of removing a kidney without first satisfying himself of the efficiency of the one he would leave behind. The increasing popularity of artificial pneumothorax and the more permanent ways of producing pulmonary collapse are directing attention towards the functional efficiency of the lungs. Bronchial spirometry,¹ however, which is similar in principle to catheterisation of the ureters, has not yet found practical application in this country, largely because of its technical difficulties. In looking for an alternative means of measuring respiratory efficiency Dr. Bluhm, of Söderby Hospital, Sweden, has considered both basal metabolic rate and blood circulation through the lungs; but the former he finds to be unaltered in patients with pulmonary tuberculosis, even in the presence of a slightly raised temperature or after unilateral or bilateral collapse, while the latter is affected only by gross destruction of pulmonary tissue and not by pneumothorax or thoracoplasty. The "working test" for pulmonary efficiency, which he describes in a monograph² depends on the comparison of oxygen-consumption at rest with oxygen-consumption after the performance of a standard amount of work, and is based on the technique which Nylin has used for testing cardiac function.³ The subject of the experiment ascends flights of steps placed in a circle for 20 rounds (occasionally only 10), the rate of walking being fixed by a metronome at 88 steps a minute. The relative oxygen-debt (Leonard Hill) is equivalent to the increase per minute in oxygen-consumption following the period of work. Normal persons sometimes show little or no increase, but most results lie between 10 and 25 per cent. Bluhm's pathological material consisted of 102 patients on whom 411 determinations were made; the vital capacity of each was also taken, but it showed little or no correlation with the functional test. The first group of tuberculosis patients comprised those not treated by any form of collapse therapy: the majority showed a normal oxygen-debt; some gave higher figures and a good correlation was established between the oxygen-debt and the amount of lung tissue involved. Exudative cases on the whole showed better functional efficiency than productive ones.

In the second group consisting of pneumothorax cases it was found that when a considerable amount of lung tissue was put out of action the oxygen-debt tended to reach higher values, especially when the pre-existing disease of the lung had led to fibrotic changes. In such cases the functional efficiency of the lung is less after a refill than it was before. In general, insufficiency tends to appear in productive cases when pressures exceed plus 1 cm. of water, whilst in exudative cases plus 3 may be reached without any functional change. Altogether 77 per cent. of pneumothorax cases showed a raised oxygen-debt. The patients investigated included only 8 who underwent thoracoplasty and in only 4 of these were observations made both before and after treatment. Three cases of phrenic evulsion are also included, but the data are too scanty to justify any conclusions. Pleural effusion complicating pneumothorax was several times associated with a particularly high oxygen-debt; this is probably due partly to the increased collapse of the lung from the weight of the fluid and partly to fibrotic changes in the pleura spreading into the lung.

That this test for lung function may have practical value is suggested by the results of a follow-up of 38 cases which show a fairly close correlation between the results of the functional test and the subsequent capacity for work. The thoracoplasty cases are few in number but show that, although the vital capacity is greatly reduced by thoracoplasty, there may be a normal or only slightly increased oxygen-debt associated with full working capacity. If further experience confirmed the results described in Dr. Bluhm's monograph, we should have a useful adjunct to clinical judgment in deciding on the advisability of surgical collapse. Oxygen-debt, however, depends essentially on muscle metabolism and slow changes in the blood, so that it is doubtful whether it really bears any relation to pulmonary efficiency. Hence it would have been useful to have observations on controls with various disorders of the heart and lungs. A further objection to the test is that it cannot be used for people who are confined to bed.

CYCLOPROPANE

THE latest account of cyclopropane strengthens the good opinion that has been formed of this new gaseous anæsthetic. Writing from the Lahey Clinic at Boston the authors¹ record only 184 inhalations but are able to provide much instructive information, including an important warning that "in using cyclopropane, where we know that the anæsthetic mixture is not only inflammable but explosive as well," particularly searching care should be taken. They think the special value of the gas lies in its application to thoracic surgery, and of their 184 operations no less than 124 were on the chest. A carbon dioxide absorption technique is of course regarded as essential for the use of cyclopropane in practice, and with this method they have maintained surgical anaesthesia at the rate of about a gallon an hour. This brings the gas within reasonable limits of expense. The utmost care is needed to avoid leakage by making the face-piece really airtight. Cyclopropane is solvent for rubber and rubber compounds; hence the pin type of valve is best adapted to the use of this gas. The solvent action however is not manifest in concentrations low enough to be within the anæsthetic range, and ordinary tubing and breathing bags, and even flutter

¹ Sise, L. F., Woodbridge, P. D., and Eversole, U. H.: *New Eng. Jour. Med.*, August 15th, 1935, p. 303.

² Bluhm, I. L.: *Working Test as Clinical Method for Determining the Function of the Lungs*. Acta Med. Scandinavica, Suppl. Ixx, Stockholm, 1935, Pp. 299.
³ Acta Med. Scandinavica, 1933, Suppl. Ili; see THE LANCET, 1933, II., 369.

valves of rubber, can apparently be retained without suffering damage. It is pointed out that "those who begin the use of cyclopropane should bear constantly in mind its great power and its rapidity of action. The effects of higher concentrations are simply astounding and are unbelievable to those who think in terms of the weaker gases, nitrous oxide and ethylene. With these our chief warning comes from signs of anoxæmia. With cyclopropane on the other hand drastic overdosage takes place in the presence of abundant oxygen." At the Lahey Clinic it is held preferable to omit all premedication except morphine gr. $\frac{1}{2}$ and scopolamine gr. 1/100-1/150. Cyclopropane is considered a valuable agent because it combines low toxicity with fairly powerful anæsthetic action. It is obviously an agent whose use requires learning, even by the man experienced with other anæsthetics.

RECENT WORK ON SPERMICIDES

Kölliker's classic work on the physiology of the seminal fluid, which included a study of the way in which the movements of sperms may be influenced by chemicals was published in 1856.¹ Fifty years later Gunther² wrote a paper on sperm poisons. Since then until quite recently, little systematic work would appear to have been done on spermicides. Results of tests have been published from time to time in Germany, America, Japan, Russia, and this country by such workers as W. Steinhäuser, M. Rodecure, Helen Holt, S. Uchigaki, C. I. B. Voge, and J. R. Baker, but, with the exception of Baker, none of these workers has made anything like a systematic study of the spermicidal power of pure substances, nor has an attempt been made to evolve satisfactory laboratory tests that make it possible to compare the spermicidal power of any one pure substance or commercial product with that of any other. A clinical test would be best, but this is not feasible owing to the large number of unknown factors involved. Dr. Baker has been working on chemical contraceptives under the auspices of the Birth Control Investigation Committee, and he has recently described his investigations in a lecture delivered before the Eugenics Society reported in the *Eugenics Review* for July, 1935 (p. 127). He has been at great pains to perfect his technique and to make the conditions under which substances are tested approach as nearly as possible to those under which they would be acting in vivo without sacrificing scientific accuracy. Details of the tests have been published in the *Journal of Hygiene* during the last few years, the last article appearing in the January 1935 issue. He has also tried to discover a harmless chemical contraceptive more efficient than those on the market. Among his observations is that sperms, from species as far distant from each other phylogenetically as the sea urchin, the guinea-pig, and man, react in an almost identical manner to the same chemicals. Rather surprisingly the only inorganic salt which he has found with a high spermicidal power is mercuric chloride with a killing concentration of 1/256 per cent. Acids he describes as weak spermicides, and he points out that, contrary to common belief, substances which are strongly germicidal are not necessarily strong spermicides, and vice versa. No alkaloid tested by him has proved to be a good spermicide; in fact strychnine hydrochloride in certain concentrations has a stimulating effect on the activity of sperms. The most highly

spermicidal substances that he has so far discovered have been aldehydes, phenols, and quinones, the four most spermicidal all being quinones, with toluquinone heading the list with a killing concentration of 1/512 per cent. When one compares this with quinine or chinosol, which can only claim a killing concentration of $\frac{1}{4}$ per cent., it is astonishing that these chemicals have for so long been popular among manufacturers of chemical contraceptives. Dr. Baker emphasises the need to put any possible spermicide through stringent tests for harmlessness, a slow but essential process, before it can even be considered for clinical trial. Dr. Carleton is doing this important part of the work at Oxford. He uses the bitch as his experimental animal and places a known quantity of the substance to be tested into the vagina every day for 28 days. After this the animal is killed and the vagina examined macro- and microscopically for any sign of infiltration or damage to the epithelium. Dr. Baker notes that he and his wife while in the New Hebrides came across some herbal preparations used by the native women, who claimed that certain plants growing on the islands when taken by mouth acted either as contraceptives, temporary sterilisers, permanent sterilisers, or abortifacients. They succeeded in obtaining the seeds of some of these plants and brought them to England where they are being grown under suitable conditions and will be tested on mice.

WEEK-END POST-GRADUATE COURSES

WEEK-END post-graduate courses at or near the opening of the autumn session of the London medical schools are now firmly established as an annual event. The scheme originated at St. Mary's Hospital in 1922, was an immediate success, and after a year or two was gradually adopted by other teaching hospitals. We observed 12 years ago,¹ when reporting the second week-end course to be held at St. Mary's, that the general adoption of a scheme of this sort might go some way to meet the reproach that the London medical schools have little to offer the former student. This year 8 of the 12 schools are providing week-end courses in September, October, or November, 3 of the courses being open to all medical practitioners and 5 confined to former students. Of the remaining 4, St. Thomas's and St. George's organised such courses in the autumns of 1932, 1933, and 1934, and St. Bart.'s again had a successful mid-week course (three days) in June, 1935, this timing having proved popular in recent years. Guy's seems to be the only London school to have consistently resisted the prevalent custom of providing annual refresher courses of brief duration. Although the necessarily intensive and high-speed nature of these courses suggests, as Dr. Robert Hutchison once said, a continuous variety programme, and may conduce to mental indigestion, there can be no doubt of their popularity with the general practitioner for whom they are primarily intended. The subjects of the lectures given during the last few years afford an interesting index of what, in the opinion of the teaching staffs of the great hospitals, are at the moment matters of importance to those engaged in general practice. It must, of course, be remembered that the mere titles of lectures in any course do not necessarily provide an adequate conspectus of its content. Many lecturers prefer the discursive method, dwelling on problems and pitfalls in diagnosis or treatment rather than on one or another aspect of any particular disease. Moreover, some of the teaching is given by means of demonstrations at the

¹ *Zeitschrift für Wissenschaftliche Zoologie*, 1856, vii., 201-81.

² *Arch. ges. Physiol. (Pflügers)*, 1907, cxviii., 551-71.

¹ *THE LANCET*, 1922, ii., 805.

bedside, in the operating theatre, or elsewhere, though, unfortunately, the very popularity of the courses must limit the amount of intimate or informal instruction.

Between 1931 and 1934 only five lectures on psychological topics have been given in these courses. In view of our increasing knowledge of mental disorder and the changed outlook on its problems, it is to be hoped that in future years this subject may receive much more attention. The practitioner realises more and more how largely the psychological element bulks in his work and how it may colour or even dominate the picture in cases of undoubted organic disease. Paediatrics has been given a larger share, with some 14 lectures, including two on acidosis. Radium therapy has been thoroughly discussed and demonstrated and the increasing importance of radiology in diagnosis has been suitably stressed. In addition to numerous demonstrations of new methods of anaesthesia there have been several lectures on the use of new agents, such as Evipan. There have been ten lectures on dermatology. Eczema has been chosen as a subject more than once, possibly because it provides a good excuse for a broad and generally informative survey of skin lesions. "Itching" received a lecture to itself one year, and the medico-legal position of dermatitis and Compensation. Another ten lectures were devoted to pathology, using that term in its widest sense. The new work on filtrable viruses and the serum prophylaxis of virus diseases, a matter of urgent clinical importance to the practitioner, have been clearly explained. More than 30 lectures have been given on obstetrics and gynaecology. Many of the aspects chosen have been conventional—uterine inertia, prolapse, haemorrhagia, toxæmias of pregnancy, and so forth; contraception was the subject chosen for two lectures, and the Aschheim-Zondek test has been described at least once. There was one lecture on sterility, but we have no record of any discussion of the pros and cons of eugenic sterilisation which easily deserved a place. Teeth and dental sepsis in relation to medicine and surgery provided two lectures, and venereal disease four. Turning to general surgery, we find some 77 titles which could be classified under this heading. Prostatic disease, from one aspect or another, has been chosen on 6 occasions and 6 lectures have also been devoted to general or special fractures. Other favoured subjects have been thoracic surgery (4), the surgery of the sympathetic (4), and varicose veins (3). There are no notable omissions in this sphere and the important new developments in neuro-surgery have not been neglected. The surgery of the special departments has also received a reasonable share of attention, mainly on general lines. On ophthalmology there have been 7 lectures, including only one on conjunctivitis and iritis, and in one of the 11 lectures on oto-rhino-laryngology, naso-pharyngeal sepsis in relation to chronic bronchitis and emphysema was discussed. There have been 7 lectures on neurological and nearly 100 on general medical topics. Of the latter, the favourites appear to have been toxic goitre, unexplained pyrexia (a hardy annual), the anemias, diabetes, nephritis, pulmonary tuberculosis, and dietetics. Nobody will quarrel with any of these, but it may have been a little depressing to practitioners that only 3 of these 100 lectures were devoted solely to the subject of treatment. Endocrinology, also, surely deserved more than 2 lectures and allergy more than one.

A week-end is certainly too short a time to do

much more than renew old contacts, but the stimulation that such contacts have afforded and the realisation that certain theoretical advances have an unsuspected practical bearing, have certainly brought to many doctors, senior as well as junior, a refreshment which has lent a renewed interest to their daily work. Some of the lectures in this year's courses, of which particulars are set out week by week in our Medical Diary, will be summarised in *THE LANCET*, three of them in our present issue. It is clear that all those responsible for drawing up the programmes for these quite independent courses have tried to put their audiences into touch with recent work without forgetting that "common things are common," and therefore deserving of attention.

SPAHLINGER BOVINE VACCINE

Hore deferred was making the heart very sick about the Spahlinger human remedies some four years ago, but it was then reported that calves on a Norfolk farm had been successfully immunised with a single dose of simplified bovine vaccine provided by Mr. Spahlinger. At that time veterinary surgeons were satisfied that the vaccine had conferred on calves a high degree of resistance against tuberculosis. A little later a test was begun in Northern Ireland under the direction of the Ministry of Agriculture, using a bovine vaccine prepared according to a method described by Mr. Spahlinger in our own columns (*THE LANCET*, 1932, i., 309). A number of calves which had passed the double intradermal test were divided into two groups, of which one was vaccinated by Mr. Spahlinger himself in December, 1931, with this new bovine vaccine by various routes. A year later a report of the test by three veterinary surgeons attached to the Ministry of Agriculture in Belfast showed that all the vaccinated animals had remained clinically healthy after receiving a dose of tubercle bacilli which killed the majority of the controls within two months. A final report by the same officers on this interesting experiment was issued by the Government of Northern Ireland on Tuesday, from which it appears that eleven vaccinated calves resisted the injection of the test dose of tubercle bacilli in a very similar manner. One animal weakened by nematode infection died of tuberculous meningitis after 607 days. The other ten animals, which remained perfectly well, were slaughtered in the municipal abattoir 780 to 892 days after injection of the test dose. One of them was found to have a tuberculous udder. Post-mortem examination revealed the presence of nodules in the lungs and certain glands; when incised these were found to contain an oily pus-like or cheese-like substance in which tubercle bacilli were not demonstrable by the *Ziehl-Neelsen* method. The material into which the vaccine was injected contained no viable tubercle bacilli. These vaccinated animals had also been exposed for two years to the risk of natural infection and the heifers were put to the strain of calving and lactation. In a foreword to the report, the secretary to the Ministry points out that the highly satisfactory nature of the results raises the question of the compulsory use of the vaccine as a means of eradicating bovine tubercle from the herds of Northern Ireland.

Prof. R. A. Fisher, F.R.S., will deliver two lectures on eugenics and national health at the London School of Hygiene and Tropical Medicine, Keppel-street, W.C., on Oct. 16th and 23rd, at 4.30 p.m. Prof. M. Greenwood, F.R.S., will take the chair at the first lecture.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXI.—PROGNOSIS IN PAPILLOMA OF THE BLADDER

PAPILLOMA of the bladder, like papilloma elsewhere in the body, must be regarded as a precancerous growth which is only too likely to become malignant if left untreated. Hospital statistics appear to indicate that the disease is on the increase, but the truth probably lies in the fact that the more frequent use of the cystoscope in cases of hæmaturia has led to accurate and earlier diagnosis. It is not possible to give a prognosis which is applicable to all cases, for it depends on the number of growths, their character, their size, their situation, and the age of the patient, but it can be stated quite definitely that though the recurrence-rate at the present time is high, the prognosis as regards life is good *provided* the patient submits to cystoscopic examination at regular intervals during a period which in the writer's experience cannot be definitely fixed but which should never be less than three years.

In a series of 97 cases which have been kept under careful personal observation the recurrences have been as high as 50 per cent. Many of these patients have been examined at regular intervals for from 10 to 15 years, during which time there have been recurrences in some almost yearly and in others at intervals of one or more years.

The following examples from this series point to the danger of too optimistic an outlook as regards freedom from recurrence, and to the necessity of regular examination over a long period.

Sex and age.		
A. B. . .	M. . .	Frequent recurrences 3 yrs.; free 3 yrs.; one recurrence 7th yr.; free 3 yrs.
C. D. . .	F. . .	Frequent recurrences 1st yr.; free 2nd yr.; recurrences 3rd, 4th, 5th, and 6th yrs.; free 7th yr.; recurrence 8th yr.; free 9th to 12th yrs.
E. F. . .	F. . .	Frequent recurrences 1st yr.; free 2nd yr.; recurrence 3rd yr.; free 4th, 5th, and 6th yrs.; recurrence 7th yr.; free 8th yr.; recurrence 9th and 10th yrs.
G. H. . .	M. . .	Free 7 yrs.; recurrence 8th yr.; free 9th, 10th, 11th, 12th yrs.; recurrence 13th yr.; free 14th yr.; recurrence 15th yr.; free 16th and 17th yrs.; recurrence 18th and 19th yrs.; free 20th, 21st, and 22nd yrs.; recurrence 23rd yr.
I. J. . .	M. . .	Recurrence 2nd yr.; free 5 yrs.; recurrence 8th, 9th, and 10th yrs.; free 11th yr.
K. L. . .	M. . .	Free 2 yrs.; recurrence 3rd yr.; free 4th yr.; recurrence 5th yr.; free 6th yr.; recurrence 7th and 8th yrs.; free 9th and 10th yrs.; recurrence 11th yr.

In three of the above the original operation was transvesical and in three perurethral, so that as far as these particular cases are concerned the method does not seem to have affected the result.

The primary growths are usually on the base of the bladder and close to the ureteric orifices; they seldom occur on the trigone. Recurrences after open operation are often in the region of the scar and in all cases are common in the paratrighal region and occasionally at the internal meatus. In the latter situation the prognosis as regards recurrence is worse, for the growths are liable to be overlooked and are difficult to treat by perurethral methods. When a growth is found on the lip of a ureteric orifice or when recurrences occur repeatedly around it, they should be regarded as possibly secondary to a primary growth in either the kidney or ureter, and every available means of diagnosis should be employed to ascertain if this is correct, for until the

parent growth is removed the recurrences will continue and may spread with alarming rapidity. Also, the parent growth may become malignant while the recurrent growths in the bladder are still benign and are thought to be the sole cause of the hæmaturia. This happened in one of my cases in which a papilliferous carcinoma of the kidney, that probably commenced as a simple papilloma, gave rise to multiple benign papillomata of the ureter and bladder which recurred in the bladder so frequently and in such increasing numbers after ureterectomy, that eventually total cystectomy became necessary.

NUMBER AND SIZE OF GROWTHS

Small solitary growths, provided they cause symptoms which lead to their early detection, seldom give rise to troublesome recurrences as they can usually be destroyed by perurethral fulguration before "seeding" has commenced. Small multiple growths give rise to frequent recurrences, often over a long period, and one of the recurrent growths may become malignant at any time; or benign recurrences may multiply so rapidly as to fill the bladder and cause severe hæmorrhage and severe cystitis. In these cases the prognosis is naturally grave on account of the dangers of ascending infection, of malignancy, and of the surgical treatment (total cystectomy) that may be required. Large solitary growths are always serious, for in addition to their tendency to slough and cause troublesome cystitis they are more prone to become malignant. Further, as removal by the transvesical route is usually necessary, there is the added danger of graft recurrence both in the vesical scar and in the abdominal wall.

FORM OF GROWTH

Five distinct clinical forms are recognisable:—

(1) and (2) The pedunculated or the sessile types of growth with long delicate fronds. These are easily destroyed by perurethral fulguration and the outlook is good provided recurrences are kept in check by regular cystoscopic examinations.

(3) The flat papilloma composed of small compact villi looking like a patch of moss. This also is easily destroyed by diathermy, but if it recurs it should be regarded as malignant and excised.

(4) The growth with coarse tightly packed villi and a thick pedicle. This responds to diathermy less rapidly than (1) and (2), often requiring two or more applications at intervals of five or six weeks, for the slough is slow to separate. On this account it should be regarded as on the verge of malignancy and a guarded prognosis given.

(5) The prominent growth with a finely granular surface. The prognosis is serious, for even if the superficial part is benign the deep layers and base are always malignant.

AGE AS AFFECTING PROGNOSIS

Papillomata are seldom seen below the age of 20 and occur with greatest frequency between 40 and 60. In the young, hæmaturia is usually investigated with little delay, so that a growth if found is always small, generally single, and easily destroyed at one sitting. Recurrence is therefore far less frequent and the prognosis correspondingly good. In older patients hæmaturia is not invariably regarded as serious, being ascribed to "inflammation" of the kidneys, enlarged prostate, gravel, and so forth;

consequently investigation is often delayed for a considerable time, during which the papilloma is increasing in size, is "seeding" and advancing steadily towards malignancy. The prognosis is therefore more serious, for recurrences are more frequent and may at any time be malignant.

The prognosis of aniline tumours occurring in dye workers does not appear to be any different to that of the ordinary growth provided the patient changes his occupation; if he does not do so recurrences are more prone to be malignant.

METHOD OF TREATMENT

Provided the growth is not too large and its whole surface is accessible the best results are obtained by cystoscopic diathermy. This does not of course prevent recurrences, for "seedlings" or implantation growths, too minute to be seen by the naked eye, may be present when the first treatment is given. Recurrences are commonly in the neighbourhood of the original growth but may be anywhere in the bladder and even in the commencement of the prostatic urethra. Therefore at subsequent examinations it is important to inspect the neck of the bladder with a retrograde telescope after the vesical cavity has been examined with the ordinary instrument. When there has been hæmaturia and no growth is found in the vesical cavity the prostatic urethra should be inspected with a posterior urethroscope. In this context it is interesting to note that recurrent growths are unknown in any other portion of the urethra. When the primary growth, though not too large for successful cystoscopic diathermy, is large enough to require several treatments which are either irksome to or unbearable by the patient, an open operation may be considered preferable.

A transvesical operation is only a necessity, when the growth is either too large for cystoscopic diathermy, is not completely accessible, or when it is judged to be becoming malignant. The great disadvantage of an open operation is the danger of graft recurrences. It is estimated from the combined literature that the recurrence-rate after an open operation is 60 per cent. In my series it was 50 per cent. after the open operation and also 50 per cent. after perurethral fulguration. Recurrences are generally in the cystotomy scar where they can be dealt with by perurethral methods and therefore do not add materially to the gravity of the prognosis; but in a small proportion of cases grafts take root in the abdominal wall where they eventually become malignant. The graft may remain dormant for many years and then suddenly light up into a rapidly growing infiltrating carcinoma. This happened in two of my cases; in one 18 months after operation, and in the other after an interval of no less than nine years, when it grew at such a pace that in a few months practically the whole abdominal wall was infiltrated. It is therefore of the greatest importance to watch the patient carefully for several years after an open operation.

DANGER OF MALIGNANCY

Every papilloma of the bladder is a potential malignant growth and the danger of malignancy increases with the frequency of recurrences. In my series of 97 cases 9, or approximately 11 per cent., developed carcinoma; 7 within five years, 1 seven years, and 1 ten years after the first treatment. When the number of primary and recurrent growths these 97 cases must have had is taken into consideration 11 per cent. of malignancy does not seem a very high incidence, but it would undoubtedly have been higher had not the patients been examined at regular

intervals, often for many years, and the recurrences kept in check.

AFTER-CARE

In a series of cases on which this article is based routine cystoscopic examinations were made at the following intervals:—

1st year	..	..	..	three monthly.
2nd year	..	..	..	six monthly.
3rd, 4th, and 5th years	..	..	..	yearly.

If at the end of this period there had been no recurrence the patient was discharged but told to watch the urine and to report immediately should any blood be seen. In the event of a recurrence at any time during the five-year period the routine examinations were recommenced.

There is little doubt that the outlook as regards both recurrence and malignancy depends on frequent and regular cystoscopic examination, for there may be as much as 12 to 18 months' interval between noticeable hæmorrhages, often the only symptom of the growth. This must be impressed on the patient and the necessity for frequent cystoscopic examination explained, otherwise he will very naturally disregard instructions until there is another attack of hæmaturia, by which time the growth may no longer be solitary and may have become malignant.

CYRIL A. R. NITCH, M.S., F.R.C.S.,
Senior Surgeon, St. Thomas's Hospital.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. J. E. Clark to *Victory* for course, and to *President* for course; A. L. McDonnell to *Drake* for R.N.B.; and A. E. Phillips to *President* for course.

Surg. Comdr. A. B. Clark placed on the Retd. List at own request, with rank of Surg. Capt.

Surg. Lt.-Comdr. W. P. E. McIntyre to *Resolution*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. A. S. Pearson promoted to Surg. Lt.-Comdr.
Proby. Surg. Lt. A. I. L. Maitland to Haslar Hospital.
Proby. Surg. Sub-Lt. L. Foster to R.N. Hospital, Chatham.

ARMY MEDICAL SERVICES

Col. J. W. L. Scott, D.S.O., late R.A.M.C., K.H.P., from Asst. Dir.-Gen., to be Dep. Dir.-Gen., Army Med. Servs., War Office.

Col. F. Casement, D.S.O., late R.A.M.C., to be Asst. Dir.-Gen., Army Med. Servs., War Office.

Maj.-Gen. R. B. Ainsworth, C.B., D.S.O., O.B.E., late R.A.M.C., K.H.P., having attained the age for retirement, is placed on retd. pay.

Col. W. P. MacArthur, D.S.O., O.B.E., late R.A.M.C., K.H.P., to be Maj.-Gen.

Col. H. M. J. Perry, O.B.E., late R.A.M.C., K.H.S., to be Maj.-Gen. (Supern.).

Lt.-Col. E. M. Middleton, O.B.E., from R.A.M.C., to be Col.

Royal Army Medical College: Maj. Gen. R. B. Ainsworth relinquishes the appt. of Comdt. and Dir. of Studies.
Maj.-Gen. W. P. MacArthur, from Dep. Dir.-Gen., Army Med. Servs., to be Comdt. and Dir. of Studies.

ROYAL ARMY MEDICAL CORPS

Short serv. commissions: Lt. F. J. O'Dowd to be Capt.
Lts. (on prob.) restd. to establt.: J. J. Sullivan, M. Kosloff, and J. L. Gordon.

Maj. J. W. C. Stubbs, D.S.O., M.C., to be Lt.-Col.

REGULAR ARMY RESERVE OF OFFICERS

The undermentioned having attained the age limit of liability to recall, cease to belong to the Res. of Offr.:—
Col. M. H. Babington, D.S.O. (late R.A.M.C.).
Maj. J. A. Bennett.

(Continued at foot of next page)

SPECIAL ARTICLES

THE TRIPLE STRUCTURE OF MEDICINE *

BY WILFRED TROTTER, M.S., F.R.S.

THE constituents of which medicine is made up are readily discernible: they are three—a practical art, an applied science, and an experimental science.

MEDICINE AS A PRACTICAL ART

It is always readily agreed that medicine is an art. The indispensable task of defining precisely what that phrase means is, however, less frequently undertaken. Medicine is a practical art in the same sense as is the work of the farmer, the smith, or the joiner. When this primary stage of definition is reached it becomes clear that definite qualities and modes of activity must be possessed by this element in medicine. These are of great practical importance, and it is surprising that they have had little exact notice. Now that the prestige of science is so high the statement that a great part of medicine still retains the status of an art is often made with a note of apology. Nothing could be less justified by a realistic sense of cultural values. The method of the practical art was the first instrument forged by man for the subjugation of chaos. At the dawn of civilisation the preservation of knowledge was far more important than its discovery. The accidental fruits of experience and the creations of genius could be saved from an infallible oblivion only by being preserved in the precepts and tradition of a practical art. The superlative need for preservation made the arts

* Being the concluding section of the Lloyd Roberts lecture, entitled *General Ideas in Medicine*, delivered before the Royal Society of Medicine on Sept. 30th, 1935.

(Continued from previous page)

Capt. J. V. Dockray, from Supp. Res. of Offr., R.A.M.C., to be Capt.

MILITIA

Maj. H. C. G. Pedler retires on attaining the age limit and retains the rank of Maj.

TERRITORIAL ARMY

Lt. G. G. Farrington to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Maj. H. A. Playfair-Robertson relinquishes his commn. and retains his rank, with permission to wear the prescribed uniform.

Capt. H. R. R. Mavor, from Active List, to be Capt.

ROYAL AIR FORCE

The undermentioned are granted short service commissions as Flying Officers on probation for three years on the active list with effect from Sept. 2nd, 1935: H. E. Bellringer, C. M. Carlyle-Gall, T. J. M. Gregg, R. S. B. McClean, R. S. Peill, R. L. Soper, W. J. L. Dean, L. N. Trethowan, J. B. Wallace, A. S. Amsden, A. B. Marshall, J. P. Carlile, and S. R. C. Nelson.

Flight Lt. J. Magner is promoted to the rank of Squadron Leader.

Dental Branch.—Wing Comdr. L. Somerville-Woodiwis, to D.M.S. Dept. of A.M.P. Air Ministry, for Staff duties as Chief Dental Officer, vice Group Capt. C. L. Colbran, O.B.E.

D. P. Boyle is granted a non-permanent commission as a Flying Offr.

INDIAN MEDICAL SERVICE

Capt. L. D. Sarronwala and Capt. M. N. Pai relinquish their temp. commns.

inherently conservative; for there was, and is, no unequivocal difference between the change that was progress and the change that was decay. New knowledge was therefore accepted as reluctantly as old custom was given up.

An art carries its possessions in precepts and rule of thumb which are applied to individual cases in the light of a trained judgment. It does not possess principles of general validity automatically applicable; that is the method of applied science. An art is taught first in precepts and rules, secondly in experience of its material, and thirdly—and most important—by example. The method of apprenticeship is thus the keynote of education in the practical arts, because it brings the pupil into familiar contact with his material and gives him the constant example of his teacher in the actual things he himself will ultimately have to do. English medical education has long been recognised as having a characteristic product. This quality, whether we regard it as good or bad, has been due to medicine being regarded as essentially a practical art, and to the consequent predominance of apprenticeship in some form as an educational method.

If we have grasped correctly the nature of the practical arts we shall be able to specify to some extent the attitude of mind and the kind of thinking necessary for the satisfactory practice of them. It is commonly said that one of the chief objects of medical education should be to make the student think scientifically. The saying is perhaps as good an example as could be found of the need in which medicine stands for the exercise of the critical mind. To think scientifically may be supposed to mean one of two things. First, it may signify the adoption of a general habit of thought induced in, and characteristic of, those who practise experimental science. Unfortunately, however, it is not possible to show that the scientific worker outside his job displays more wisdom, insight, and practical judgment than anyone else of the same general capacity. Secondly, to think scientifically may mean to use the kind of mental process necessary for the satisfactory pursuit of experimental science. The scientific worker among other qualities must have an especially severe standard of evidence and proof; he must draw no conclusion that is not strictly justified by the evidence, and he must be content to leave in suspense any decision for which the materials are not quite complete. Now the last thing a doctor is free to do is to exercise the scientific suspense of judgment, and he scarcely ever makes a decision that is justifiable on strictly scientific grounds. The advice to think scientifically would seem, therefore, to risk paralysing his judgment rather than activating it.

The truth appears to be that what the user of a practical art needs is less the strict and limited instrument of scientific method than what may be called a soundly cultivated judgment. This requirement is more difficult to specify and much more difficult to secure. Apart from inborn capacity, it seems to depend on familiarity with the material of the art, otherwise experience, and on a broad and sound general culture which, while including a proper awareness of science, is by no means limited to it. The ancient and honourable art of medicine is being increasingly and inevitably pressed on by applied science, and suffers as well from misunderstanding and loss of prestige. It remains, however, the backbone of medical practice and indispensable

to mankind. There is therefore an especial need to-day that its characteristic mode of activity should be understood, and should not be confused with those of the other elements that make up the complex of medicine.

MEDICINE AS APPLIED SCIENCE

The conversion of the practical arts into applied sciences is a characteristic and familiar process in modern civilisation. The rate at which this change is going on is often the subject of enthusiastic and even excited comment. To the sober realist, however, it is clear that the rule of science in medicine is still not much more than strictly local and much qualified. The cases are very few in which general principles can be applied to the individual instance with the direct precision of an engineer designing a dynamo. The diagnosis and treatment of errors of refraction, certain cases of bacteriological and of chemical diagnosis, and others of physical diagnosis and treatment, with the dietetic deficiencies, make up the examples of nearly pure applied science. Elsewhere methods of precision must be very strictly subject to the art of medicine if they are not to become a mere snare. The affectation of scientific exactitude in circumstances where it has no meaning is perhaps the fallacy of method to which medicine is now most exposed. When we observe how fully the quack has assimilated the language of science it is easy to see the need for exact definitions lest we ourselves fall, with the worthiest intentions, into something not much better.

MEDICINE AS AN EXPERIMENTAL SCIENCE

When we turn to contemplate the element of experimental science in medicine, we find that the need for some effort of definition is not less than it is elsewhere. Experimental medicine, or, as it has been more conveniently named, clinical science, is at a stage when the clear recognition of it as an independent form of scientific activity—if such it really is—is peculiarly important. If it is a science capable of being pursued and developed as such, it is a competitor for support on equal terms with the other sciences, and occupies a field particularly likely to attract endowment.

Now it is often supposed that the case for the independence of clinical science is met by pointing out that the scientific element in medicine is merely applied physiology and applied pathology. From this not very recondite truth it is concluded that any further benefit to medicine from physiological and pathological discovery can come only from work done by professed physiologists and pathologists. This view seems to ignore the way in which the sciences are distributed and have come into being. Independent sciences have arisen in the past, not apparently according to whether people said they must or they must not, but through finding a natural field and doing good work in it. According to their fields of work the sciences can be divided in a broad and simplified way into two groups. There are what we may call the *general sciences*, such as physics and chemistry, by which phenomena of a certain *kind* are chosen for study. Then there are the sciences we may call *topical*, by which phenomena of a certain *distribution* are chosen for study. Belonging to the second group are such sciences as astronomy, meteorology, and geology. The fact that they could all be described as applied physics and chemistry does not in the least impair their continued independence. These sciences have readily assimilated new discoveries in physics and chemistry that were

relevant to their work. They have, however, not been content merely to wait on progress in these sciences, but have been ready to undertake physical and chemical researches on their own account in problems presented by their material, and often with the happiest results. It is certain that meteorology and geology would not be in their present healthy state if they had not been prepared boldly to invade the realm of the physicist or chemist when occasion arose.

The analogy between the position of these disciplines and that of clinical science is close and instructive. Clinical science takes as its field the study of sick people, thus choosing a range of phenomena forming a natural group of the highest importance and interest, and no more arbitrary from the theoretical point of view than are those chosen by the meteorologist and geologist. The chief sciences that are general in the sense we have defined in regard to clinical science are physiology and pathology. While taking full advantages of any appropriate discovery in these sciences, it need no more wait on the advance of them than geology has waited on the advance of physics and chemistry, but is bound to undertake physiological and pathological researches of its own when they become relevant to its purpose. The art of medicine will long remain the chief implement of the practical doctor. Admirably adapted as it is for the conservation of knowledge it is in its very nature ill-suited for the discovery of new truth. I venture, in conclusion, to recall a classical example of this fact and its consequences.

A CLASSICAL EXAMPLE

In 1745 James Lind described the cure of scurvy by lemon juice; and in 1840 Steinhäuser, that of rickets by cod-liver oil. If these doctrines had been enunciated by teachers of great prestige they might have become accepted clinical precepts, and slowly acquired empirical stability. They did not have that good fortune. In spite of the desperate urgency of the problem of scurvy in the eighteenth century, and that of rickets in the nineteenth, no proof or disproof was established, because it is not in the nature of a practical art to seek for certainty in the scientific sense. The truth remained undistinguished among the innumerable opinions current about these diseases for 150 years in one case and 80 years in the other. As late as the admirable *Encyclopædia Britannica* of 1911, the most authoritative opinion inclined to ascribe rickets to an intestinal toxin and scurvy to an unknown microbe. The practical art of medicine alone knew the urgency of the problems, and actually for many years possessed the key to both. It was therefore in an extraordinarily favourable position for a direct attack on them. The method alone, it, as an art, did not and could not possess. That belonged to physiology, which for long years had no interest in the problems, and approached them at last as it were indirectly and almost with reluctance. When the cause of scurvy was at last scientifically ascertained in the classical experiments of Holst and Fröhlich two circumstances of the discovery attract our notice. It was made 173 years after Bachstrom had categorically and correctly announced the cause of scurvy and 162 years after Lind had described its cure, and it was made in the course of a research primarily undertaken for another purpose. It is difficult not to believe that an active clinical science, by its situation so favourably placed for a direct attack, could have saved some of these long and costly years.

BRITISH MEDICAL ASSOCIATION

MEETING IN MELBOURNE

THE 103rd annual meeting of the British Medical Association began in Melbourne on Sept. 9th with a civic reception at the Town Hall where the visitors were welcomed by the Lord Mayor, by Senator Sir George Pearce on behalf of the Commonwealth Government, and by Dr. Harris, Minister for Health, on behalf of the Government of Victoria. In the course of his reply, the president of the Association, Dr. S. Watson Smith, likened the rise of the city of Melbourne, which was 100 years old, to that of the B.M.A. which was only a little older. On the same evening there was a brilliant gathering at a reception given by the Government of Victoria at the National Gallery, the spacious rooms and beautiful corridors of which formed a good setting for the vivid pageant of academic robes. The Premier, Mr. Dunstan, and Mrs. Dunstan received the 2500 guests; standing with the Premier were the president-elect of the Association, Sir James Barrett, and Lady Barrett.

On Sept. 10th the adjourned annual general meeting opened in the Town Hall, in the presence of the Governor-General and Lady Isaacs, and the Governor and Lady Huntingfield, with an attendance of nearly 2000. After the induction of the new president, Sir James Barrett, his first action was to send a message of loyal greeting to the King. Sir Isaac Isaacs, in declaring the meeting formally open, spoke of the beneficent effects of medical research, and said that there was every reason to be optimistic with regard to the major problems still unsolved. The Lord Mayor of Melbourne then presented the flag of the city to the Association, and Sir James Barrett later delivered the presidential address on hospital problems which was summarised in a leading article in our issue of Sept. 21st. Before the meeting closed, a telegram was received from the King conveying thanks for the president's message.

On the afternoon of the 10th services were held at St. Paul's Cathedral, where the sermon was delivered by the Bishop of Wangaratta, and at St. Patrick's Cathedral. The president's reception took place in the Town Hall that evening, when over 3000 guests were present.

ACADEMIC HONOURS

On Sept. 11th, at a special ceremony in Wilson Hall, Sir James Barrett as Chancellor of Melbourne University welcomed the visitors, and conferred honorary degrees as follows:—

Doctor of Medicine.—Lord Horder, Sir Henry Gauvain, Dr. J. S. Fairbairn, Dr. Robert Hutchison, Prof. Edwin Bramwell, Sir William Willcox, Sir Lindo Ferguson (Dunedin), Sir Ewen Maclean, and Dr. E. Kaye le Fleming.

Doctor of Dental Science.—Dr. E. W. Fish.

In acknowledging the honour on behalf of his fellow graduates Dr. Hutchison said that medicine should keep in the closest touch with the universities so that the academic spirit might permeate its teaching and practice. Reform of the medical curriculum was desirable, and he considered that what was needed most was some change in the student's pre-medical education. At present skilled technicians rather than educated men were being "turned out," with the result that medical literature, though it abounded in facts and details, was comparatively poor in ideas and generalisations, while

in point of expression and style it compared unfavourably with the medical writings of last century. Dr. Hutchison then described the development and present state of his own specialty, pædiatrics, and made a plea for a more generous academic recognition of this subject. In England and Australia such recognition was sadly lacking: there were only two chairs in the subject in England and two in Scotland. Unlike many other specialties, pædiatrics was not a narrow restricted subject, but was as broad as medicine itself, and worthy to rank with the great triad of medicine, surgery, obstetrics and gynæcology. One way in which its importance could be immediately recognised by universities was to give it more prominence in the 'final examination.

Another impressive ceremony followed, in the admittance of 16 Australasian doctors to membership of the British College of Obstetricians and Gynaecologists. For this purpose Sir James Barrett vacated the chair in favour of Dr. Fairbairn, president of the College.

LECTURES

Next day, at a meeting of the Royal Australasian College of Surgeons, Mr. R. B. Wade, the president, bestowed honorary fellowships on Prof. E. W. Hey Groves and Mr. H. S. Souttar; and Prof. Hey Groves delivered the first Hamilton Russell memorial oration, entitled the Romance of Surgery. He began by describing the life and work of Hamilton Russell, who died in Melbourne in 1933, and spoke of the innate modesty which forbade him to take pride in anything but the fact that he was a pupil and last house surgeon of Lister. In the course of his lecture Prof. Hey Groves also had something to say on hospital policy, and maintained that the time had come when every hospital which undertook the treatment of the sick and the investigation of disease must come under public control—for example, that of the Ministry of Health. It should be no longer possible for a private person to give or bequeath a hospital to the community without inquiry by the Ministry of Health as to how that hospital was to be supported, whether it was needed, and above all how it was to be staffed. Now that the hospital represented a scientific clinical laboratory in which the work must be highly differentiated and specialised, it was obvious that multiple small hospitals with no connexion with one another and no responsibility except to their own directors were an absurdity.

Other lectures were given during the week by Sir William Willcox (dental sepsis and its relation to focal infection), Sir Ewen Maclean (the general practitioner and forceps), Dr. S. Watson Smith (skin manifestations in diagnosis), Prof. Edwin Bramwell (specialism: neurology and medicine), Mr. H. S. Souttar (oesophageal obstruction), Dr. Robert Hutchison (dyspepsias of childhood), and Prof. Hey Groves (the "valley of dry bones").

Lord Horder gave a "popular lecture" on eugenics, Dr. H. Guy Dain an address on National Health Insurance, and Dr. Z. Mennell the Embley memorial lecture.

EXHIBITIONS AND EXHIBITS

A doctors' hobbies exhibition, organised by Dr. H. C. Colville and housed in the geology school at the University, attracted much attention. It included examples of the beautiful work of Dr. Julian Smith and many other amateur photographers, especially noteworthy being the contributions of Dr. Harold Moore and Dr. C. H. Kellaway's photographs of

Australian birds at the nest. Dr. Colville's portraits, Dr. C. T. Stephen's water-colour studies, and Dr. Douglas Thomas's landscapes were of particular interest, while Dr. Stephens also had carvings in stone and wood. Dr. G. Kaye showed a home-made lathe and a large collection of beautifully finished chrome-plated surgical instruments which he has made, including even bronchoscopes, cesophagoscopes, and illuminating laryngoscopes. Dr. D. G. Renton exhibited home-made anæsthetic apparatus, and Dr. Ivan Connor furniture of excellent workmanship. Collections of stamps, coins, old books and documents, pewter, spoons, pottery and porcelain, antique silver, native weapons, and various kinds of needlework, completed a display of very diverse talent.

A museum, prepared for the occasion by a committee of which Prof. F. Wood Jones, F.R.S., was chairman and Dr. E. S. J. King hon. secretary, was housed in the University anatomyschool. No complete account can here be given of the magnificent collection brought together, but a few of the exhibits may be singled out for mention.

Dr. F. M. Burnet demonstrated lesions produced by viruses growing on the chorio-allantoic membrane of the developing hen's egg—a cultural method likely to be valuable because it provides means of measuring quantitatively the concentration of certain viruses. Exhibits of Australian snakes and the properties of their venoms were given by the Hall Research Institute and the Commonwealth Serum Laboratories. Specimens and photographs of *Tania saginata* and of its production of "beef measles" in the ox, exhibited by Dr. Penfold and Miss Phillips of the Baker Research Institute, depicted with unusual completeness and clarity the life history of this parasite. Dr. R. A. Willis provided photographs and maps illustrating the structure of teratomata. The University department of bacteriology displayed a variety of exhibits, and a fine collection of specimens of eye diseases from the Alfred Hospital and the Eye and Ear Hospital was exhibited by Dr. J. R. Anderson and Dr. R. B. Maynard. Dr. R. Webster of the Children's Hospital showed a large series of specimens illustrating almost the whole of the pathology of childhood. The cranial characters and outstanding racial features of Australian and Tasmanian aborigines were illustrated by specimens exhibited by Prof. F. Wood Jones. From the Hall Research Institute and the University pathology department came exhibits illustrating pulmonary pathology (Dr. E. L. Cooper) and hydatid disease (Dr. R. J. Wright Smith). From the Baker Research Institute, Alfred Hospital, and University pathology department came a collection of intracranial tumours, displayed by Dr. L. B. Cox. Specimens illustrating diseases of bone was arranged by Dr. R. D. Wright, of the University pathology department; from which also came specimens of diseases of the thyroid gland, of the pancreas, and of the heart and arteries (arranged by Dr. M. C. Davis). Dr. E. S. J. King showed exhibits of the Golgi apparatus in various normal and diseased tissues. Several collections of skiagrams covered a large part of the field of radiography. Prof. R. Marshall Allan had collected from the various hospitals an almost complete series of gynaecological and obstetrical abnormalities.

Each member of the meeting received a copy of the Book of Melbourne, compiled by a committee consisting of Drs. A. P. Derham, E. Ford, T. Blois Lawton, and W. G. D. Upjohn, and edited by Dr. Mervyn Archdall, which is full of interesting information well presented. The subjects dealt with include the growth and development of the State and city, the history of the medical school, the organisation of medical research and practice in Australia, the Victorian hospital system, public health in Victoria, education in Victoria, the Australian aborigines, Australian animal and plant life, art in Australia, and sport.

SECTIONS OF MEDICINE AND SURGERY

At a combined meeting of these sections, presided over by Sir HENRY NEWLAND (Adelaide), Lord Horder and Sir Thomas Dunhill (London) opened a discussion on

Thyrotoxicosis

LORD HORDER said that thyrotoxicosis was an unsatisfactory name, because there was no proof that the syndrome was primarily due to either hyper- or dysfunction of the thyroid gland. Although the disease had toxæmic features, the precise source and nature of the toxæmia were obscure and the pathogenesis of the disease unknown. The thyroid might be more sinned against than sinning. Efforts at analysis of the syndrome had perhaps confused rather than clarified our ideas. As to ætiology, there was a diathesis of Graves's disease, sex and sex epochs were of obvious importance, and so was psychic trauma. Some workers laid stress on focal sepsis, but the speaker found the search for this disappointing in most cases. In the established disease endocrine imbalance became obvious, and the symptoms unmistakable. It was in the early less obvious cases that diagnosis was most important. Training in observation of facies and behaviour was the key to the detection of early cases. If, instead of hurriedly falling on the patient with all our diagnostic equipment, we were merely to "stand and stare," it would be more often evident to us that the patient was staring. Minor symptoms—rapidity of manner, the moist hand, flushing, emotional and temperamental changes, and so on—were to be watched for. In treatment, judicious but uncompromising ordering of the patient's routine of life was essential; and bromides or belladonna were helpful in some cases. The so-called specific sera were valueless. Partial thyroidectomy had so completely justified itself that discussion of this subject was superfluous. There were three main indications for surgical treatment: (1) persistence of symptoms after six months' proper control of the patient's routine life, (2) definite relapse after stabilisation on a satisfactory routine, and (3) the appearance of auricular fibrillation or cardiac dilatation. Thyroidectomy achieved its best results in well established cases. When we knew more of the nature of the benefits of thyroidectomy, the pathogenesis of the disease would be better understood.

SIR THOMAS DUNHILL said that in spite of improvements of surgical treatment, the Registrar-General's figures showed a great increase in the numbers of deaths from Graves's disease in Great Britain in recent years. Exaggerated statements were often made about this disease, such as that rest and iodine would always make operation safe, or that surgery guaranteed a cure. These were mis-statements, and the word "cure" had much better be dropped. As to symptomatology, the patient's inherited constitution was probably of main importance in determining to what organ or function the principal symptoms would be referable. With regard to cardiac failure, fewer well-logged cases were seen than formerly and more with auricular fibrillation. Most of the fibrillating cases regained normal rhythm after operation, but careful control of régime thereafter was essential if relapses months or years later were to be avoided. Glycosuria was often the main symptom, and operation was often efficacious in removing this. The most pathetic group of cases comprised those with change of temperament; and, before operating on these, careful consideration must be given to past and family history, and consultation

with an experienced physician was essential. A decided risk was the development of a demented state following operation. The worst patients to handle were those who were badly emaciated; it was often essential to operate on these in stages, and ligation of the thyroid arteries was helpful in improving nutrition. In assessing operative mortality, it must be remembered that patients with Graves's disease not infrequently died suddenly quite apart from operation. Sir Thomas Dunhill then described—as an unusual symptom—the development of bilateral patches of mucinous degeneration beneath the skin of the legs, associated with coarseness of the skin itself. These patches, which had been badly named "localised myxœdema," disappeared along with the exophthalmos after successful operation; and it was pertinent to ask whether a similar lesion of the orbital tissues was responsible for the exophthalmos. With regard to the operation in severe cases, the smallest possible inroad was desirable. The statement often made that excision removed the source of the poison and that once over the operation the patient would thereafter steadily improve was false. There was little doubt that storage of the secretion in tissues other than the thyroid could persist for days or weeks.

DISCUSSION

Prof. C. E. HERCUS (New Zealand) said that in New Zealand both simple goitre and exophthalmic goitre were very common, and the two conditions were clearly related. The incidence of thyrotoxicosis was highest in endemic goitrous districts. From the data collected by the thyroid clinic in Dunedin, it appeared probable that there was no real basis for the distinction between primary Graves's disease, secondary Graves's disease, and simple goitre. The cases of simple goitre often exhibited mild symptoms of thyrotoxicosis. New Zealand provided many examples of familial thyrotoxicosis.

Dr. A. W. HOLMES A COURT (Sydney) briefly outlined some aspects of diagnosis and medical treatment. He considered that irradiation with X rays was useful in relatively few cases, those with early diffuse enlargement. Iodine amelioration was well recognised but by no means invariable. He mentioned a case in which cardiac failure had ensued despite very drastic attack on "septic foci."

Sir CARRICK ROBERTSON (New Zealand) endorsed the remarks of Prof. Hercus regarding the incidence and relationships of various types of goitre in New Zealand. He deprecated the indiscriminate and long continued use of iodine. He performed his operations in one stage wherever possible, removing about four-fifths of each lobe. Among 754 cases he had had occasion to do the two-stage operation in only two. Ligation of the arteries was a valuable aid. He used local pericaine anaesthesia with proper premedication, and adjuvant gas and oxygen. If cyanosis appeared during operation, he did not hesitate to open the trachea which he sutured again when the operation was completed. He had had seven deaths, a mortality of about 1 per cent. Four of these were in cases of "apathetic" thyrotoxicosis with cold, dry skin, cases which he therefore regarded as bad surgical risks.

Dr. H. HUME TURNBULL (Melbourne) said that while it was true that even severe cases did sometimes recover without special treatment, surgery was the only really valuable method of treatment. Although he himself was a physician, he thought that the physician played a relatively slight part in the treatment of thyrotoxicosis. Sir Thomas Dunhill

had remarked on the increasing number of deaths from Graves's disease recorded by the Registrar-General; but this might easily be complementary to his other observation that water-logged cardiac cases were diminishing; cases which formerly were classified as dying from "heart failure" now being correctly diagnosed as due to thyrotoxicosis. As to focal sepsis, while there was no doubt that this aggravated the disease, he had never seen a case in which thyroidectomy had been avoided by removal of septic foci. The trend of the present discussion had been to emphasise the danger of operation; but he thought that greater danger lay in non-operative treatment, and surgeons should not be too modest.

Dr. ALAN NEWTON (Melbourne) agreed with Dr. Turnbull that the increasing recognition of the thyroid origin of heart failure explained the increasing number of deaths recorded from thyrotoxic disease. Dr. Newton referred to the serious complications of exophthalmos; and to an unusual manifestation of Graves's disease, paresis of the muscles of the upper parts of the face. The surgeon should remember that these patients were frightened people, and therefore pre-operative treatment should be by the surgeon himself and the patient's nurses should not be changed. It was difficult to obtain these conditions in public hospitals, and this might account for the higher mortality-rate in these institutions. In his own private practice the mortality-rate was 0.4 per cent., but at the Melbourne Hospital his cases had a mortality of 3 per cent. Analysis showed that nothing short of subtotal thyroidectomy gave satisfactory results.

Dr. S. PERX (Melbourne) upheld the view that focal sepsis was an important causative factor.—Dr. S. V. SEWELL (Melbourne) endorsed the remarks of Dr. Turnbull on the preponderating value of surgical treatment.—Dr. C. DENNIS (Melbourne) said that over-treatment with X rays had brought this mode of therapy into disfavour, and asked the openers whether they had seen benefit from repeated moderate doses.

Dr. H. POATE (Sydney) said there were three main clinical types of the disease, the cardiac, the nervous, and the metabolic. X ray treatment was of value in young patients with cardiac symptoms, but not in any other cases. He endorsed Sir Carrick Robertson's remarks on the risks of "iodine addiction." He believed that the thyrotoxic patient was on the verge of acidosis, and that pre- and post-operative alkalisation was of decided value.—Prof. A. M. DRENNAN (Edinburgh) recalled the importance of iodine deficiency in the causation of goitre, and commented on the low iodine content of the hyperplastic thyroid tissue in thyrotoxicosis.—Dr. F. HANSMAN (Sydney) said that in thyrotoxicosis there was loss of calcium and phosphorus from the body and this suggested the operation of some endocrine factor other than thyroxine.

Lord HORDER, in reply, said he wished the problem was as simple as some of the speakers' remarks implied. He again stressed the fallacy of assuming that Graves's disease was initially one of thyroid disfunction. Because thyroidectomy at a certain stage of the disease achieved such beneficial results, it was fallacious to argue that the thyroid was the primary source of trouble. The position was analogous to that of splenic anaemia or of acholuric jaundice, in which the beneficial effect of splenectomy at a certain stage did not necessarily mean that these conditions were primary diseases of the spleen. Lord Horder regretted that Prof. Hercus had omitted to

describe the nature of the mild supposedly toxic symptoms in patients with simple goitre in New Zealand: it was important not to mistake the symptoms of simple nervousness for toxic symptoms. He disagreed with Dr. Turnbull's view that the physician was almost useless in treating Graves's disease; the physician should play an important part in close collaboration with the surgeon. A final warning with regard to operation was—if you wish to do a disservice to thyroidectomy, do it too early.

Sir THOMAS DUNHILL, in reply, urged Prof. Hercus to publish details of his observations on the relationship which he had described as existing between simple and toxic goitre in New Zealand. Regarding Sir Carrick Robertson's technique, Sir Thomas said it was also his own practice to complete the operation in one stage whenever possible; but there were cases which could only be dealt with safely in two stages. In reply to Dr. Dennis, he maintained that X ray treatment was of value in early cases in young people; but there were many cases which, after alleged cure by X radiation, returned with auricular fibrillation. In treating Graves's disease there was need of the closest coöperation between physician and surgeon; and we must retain sanity, moderation, and judgment.

SECTION OF OBSTETRICS AND GYNÆCOLOGY

At the first meeting of this section, held under the presidency of Dr. J. S. FAIRBAIRN (London), a discussion on the present position of

Cæsarean Section in Obstetric Practice

was opened by Mr. J. BRIGHT BANISTER (London). At first, he said, this operation was adopted as a life-saving method for both mother and child, but there was now a tendency to adopt it as the easiest method of delivery. Such interference on insufficient indication was more readily undertaken by those who did not appreciate the risks involved. There was no doubt that the use of Cæsarean section was excessive, with an associated increase in the maternal death-rate, and a reduction was strongly to be recommended. The operation occupied an unjustifiable position in obstetric practice, its incidence being too high, its indications too wide, and its mortality too great for any method attempting to lessen maternal mortality. Analysis of a series of cases reported in the *American Journal of Obstetrics* for September, 1928, showed that these strictures were not undeserved; for in this series 55 separate indications for Cæsarean section were noted, including such conditions as failure to progress, advanced age of mother, breech presentation, previous perineal repair, and unwillingness to undergo pains of labour. The maternal mortality-rate in the series was 6.6 per cent.; could it therefore be defended on the grounds of safety? In England and Wales the maternal mortality for Cæsarean section cases was 16 times as great as that for obstetric cases generally. In British maternity hospitals the mortality-rate of Cæsarean section undertaken by competent operators was 5.8 per cent. Mr. Banister considered that a purely surgical outlook on purely obstetric problems was a patent cause of the great increase in the operation. A contempt for Nature came with the knowledge that the uterus can be easily emptied. "Trial labour" was often a travesty in contracted pelvis. Before Cæsarean section was undertaken a trial labour patient should have had second-stage pains for several hours. There was also failure to appreciate

the conditions present in a given case; "failure to progress" meant that the obstetrician was ignorant of the conditions present. It was essential that obstetrics should be in the hands of obstetricians and not of surgeons who did obstetrics. He considered that unnecessary value was given to the life of the child to the sacrifice of the life of the mother. He had been surprised by the importance laid on laboratory findings as compared with clinical investigations in American obstetric practice. For example, the Cæsarean rate in one hospital was 4.2 per cent.—for such indications as "slight blood pressure," or "slight rise in blood-urea." It was not sufficiently realised that Cæsarean section was an abdominal section which had at least a 1 per cent. operative mortality compared with a 0.2 per cent. obstetric maternal mortality in all cases. Cæsarean section at present was a prostitution of a useful operation which was performed far too freely when accurate obstetric methods would avail.

Prof. J. B. DAWSON (Dunedin, New Zealand) spoke of the difference between British and American obstetric figures. Normal labour was a perfect mechanical procedure, whereas difficult labour was very imperfect. He suggested that the comparison of statistical figures is unfair, in that the mortality of a serious group of cases is compared with the mortality of all cases, 90 per cent. of which are normal. What we wanted to know is what would have happened if the obstetric dilemma had been circumvented by methods other than Cæsarean section. He believed that the procedures of high forceps or craniotomy would have the same mortality. He considered that mortality received too much consideration as compared with morbidity; many women had vaginal deliveries at great maternal cost and a staggering number of foetal deaths. To finish vaginal delivery might be a personal triumph for the obstetrician, but was often disastrous for the mother. Thirty years ago Cæsarean section was said to be performed too often; the mortality was still too high and Prof. Dawson believed that this was due to too many operations performed too late. The operation was not used too much but was too much delayed. Improvement would come by reducing delay rather than reducing use; great care should be taken to select the optimum time of performance and suitable surroundings. The training of an expert surgical team was an important factor in the success of this operation.

Dr. W. IVON HAYES (Melbourne) agreed that bad selection of cases, delay, and faulty technique were responsible for the present high maternal mortality. The high death-rate associated with cases of renal toxæmia called for the greatest conservatism and the temptation to operation must be resisted. Severe accidental hæmorrhage had not been treated by Cæsarean section for the past six years in the Women's Hospital, conservative measures having proved satisfactory. In the management of disproportion one was faced with elective Cæsarean section or trial of labour. The fatalities occurred in the late cases, and the mortality rose very rapidly after membranes had been ruptured for more than 12 hours. Lower uterine section should be used in all potentially septic cases, while Cæsarean hysterectomy should be undertaken for definite septic conditions. He agreed that Cæsarean section was an easy escape from difficulties but a dangerous method of delivery, and the results could be improved by earlier recognition of indications.

Dr. H. A. RIDLER (Sydney) said that generally the

less competent the obstetrician the more Cæsarean sections he performed. The great widening of indication in the last 20 years might be evidence of the craze for speed. The high mortality-rate was lessened by adopting the lower-segment operation after "failed forceps" or prolonged labour with ruptured membranes. Late recourse to operation, unfortunate choice of case, and unsuitable surroundings all gravely increased the maternal mortality-rate. He concluded with the plea for more intensive obstetric training.

Dr. M. ELLIOTT SMITH (Brisbane) presented a series of figures from the Queensland Obstetrical Society. Antenatal care was still, he said, the most important factor and good surroundings for delivery were necessary if difficulty was anticipated. Cæsarean section had no place as an operation of last resort; but it was sometimes hard to decide when it should be performed.

Dr. F. BROWN CRAIG (Sydney) pointed out that Cæsarean section was done more often in the suburbs than in the teaching hospitals. He considered that mature obstetric opinion should always be obtained before the operation is undertaken.

Dr. E. R. WHITE (Melbourne) held that often the operation offers the best chance of a living child to the elderly primipara. The after-care of Cæsarean section was important; one of the most serious complications being abdominal ileus, the incidence of which was much reduced by adequate pre-operative care.

Dr. J. S. GREEN (Melbourne) said that the greatest problem was the nearly normal case which had a tedious labour. There was great risk of stillbirth in these cases and the problem of Cæsarean section was often canvassed. He also mentioned the great difference in the incidence of the operation at various institutions. He inquired if Mr. Banister could furnish any reason for this difference in incidence. He asked also what was Mr. Banister's attitude when confronted with the choice between undertaking a difficult forceps extraction with considerable risk to the child, or performing Cæsarean section. Often there was considerable psychological difficulty with regard to the survival of the child in trial labour.

Dr. GEORGE SIMPSON (Melbourne) considered that Cæsarean section and sterilisation was the procedure of choice for cases presenting medical contraindications to further pregnancy.

The PRESIDENT considered that the emphasis laid upon possible resort to Cæsarean section lessened the effect of good obstetric teaching. "Request" operations were ethically very undesirable.

Mr. BANISTER in reply said that the meeting evidently agreed that Cæsarean section was undertaken too often and that each case must be considered separately. The "quick" decision in obstetric cases was bad, leisurely methods being desirable. The quasi-normal case should be given a reasonable trial of labour. He could not agree that an elderly primigravida was a "ripe" subject for Cæsarean section. In reply to Dr. Green, he said that the East End Maternity Hospital is staffed by general practitioners, but that the vast majority of the work is done by the matron—an outstanding midwife. This hospital served the same district as the London Hospital where a large number of the abnormal cases were admitted. There was, therefore, not quite the same influx of all types of cases at the East End Hospital. In making a decision in a difficult case, one should make a careful examination under general

anæsthesia and then decide between Cæsarean section and the application of high forceps.

Placenta Prævia

Sir COMYNS BERKELEY (London) in opening a discussion on this subject based his remarks on an exhaustive investigation of 4374 cases collected from 19 British hospitals. He advanced a plea for the universal adoption of the report-form approved by the obstetrical section of the Royal Society of Medicine. As a result of his investigation, Sir Comyns was enabled to formulate a series of rules to be observed in the treatment of placenta prævia. These were, briefly: (1) to control the bleeding as soon as possible; (2) to combat shock, if present; (3) to use every endeavour to prevent sepsis; (4) not to hasten delivery, apart from cases of Cæsarean section; (5) to make no pelvic examination unless prepared to commence treatment at once; (6) not to expel the placenta until entirely separated, unless there was hæmorrhage; (7) to use a pointed instrument to pierce the placenta, should this be necessary; (8) to use an efficient antiseptic solution, if packing of the vagina is undertaken; and (9) to avoid Cæsarean hysterectomy if possible. Control of the hæmorrhage should be the main aim in treatment as the patient is never safe until the uterus is empty and well retracted. Packing the vagina was deprecated in view of the increased rate of sepsis associated with it.

Shock was a frequent cause of death and should be treated early and energetically by intravenous glucose therapy or blood transfusion. The commonest cause of death, apart from those who died undelivered, was sepsis, and the greatest care in the management of these cases was essential. If shock had been treated and hæmorrhage controlled, there should be no haste in delivery, avoiding such procedures as version and immediate extraction, or the abuse of pituitrin. Pelvic examination might increase the seriousness of hæmorrhage and should only be undertaken if one was prepared to control any further blood loss at once. No attempt should be made to expel the placenta until it is completely separated unless post-partum hæmorrhage occurs, even though it is small in amount, when the uterus must be emptied. If the placenta was central in position and had to be perforated, a pointed instrument such as a uterine dressing forceps should be employed because it carried less risk of further placental separation. The maternal mortality of Cæsarean hysterectomy was very high and the operation should be avoided where possible though it might be essential if hæmorrhage did not cease after delivery.

Sir Comyns drew attention to the diversity of methods in use in treating the various types of placenta prævia. He suggested that the best results would be obtained when one specific method of treatment was followed to the exclusion, whenever possible, of any other. Although it was desirable that the treatment be carried out by experts, in many cases immediate steps must be taken to control hæmorrhage.

When dealing with central placenta prævia the safest method for both mother and child was Cæsarean section when the patient was 36 weeks pregnant or over. With the exception of bringing down a leg in a breech presentation, the mortality of Cæsarean section was by far the lowest of any method. In cases less than 36 weeks pregnant, the advantage of Cæsarean section was not so great, but it offered

far better chances of securing a child which would survive. Even if the child was dead, Caesarean section was still the treatment of election in patients 36 weeks pregnant and over. Under 36 weeks of pregnancy the patient should be delivered by bringing down a leg. Lastly, one was justified in performing Caesarean section in a multipara over 36 weeks pregnant because the chances of a living child being obtained were good; but the operation was not justifiable under 36 weeks pregnancy, because the patient already had children, the viability of the child was much reduced, and the method of bringing down a leg in a breech presentation had a lower maternal mortality.

Incomplete placenta prævia was best treated by rupturing the membranes and allowing labour to proceed, a tight binder being applied. The death-rate associated with this method was far lower than by any other method. Bringing down a leg in a breech presentation was also satisfactory. In cases of this type Caesarean section and spontaneous labour had considerably higher maternal mortality. Lateral placenta prævia was as a rule over-treated. The safest course was to allow labour to progress without interference. The next safest methods were rupture of the membranes and bringing down a leg in breech presentation. Vaginal packing was to be condemned because of the grave risk of sepsis, and in many cases it was not satisfactorily performed.

Prof. J. C. WINDEYER (Sydney) expressed the hope that the obstetric hospitals of the Empire would adopt the form of report recommended by the obstetric section of the Royal Society of Medicine. The advantages of various forms of treatment could then be estimated with considerable accuracy. He had been an advocate of scalp traction for some years. This method possessed the advantage that a minimum of vaginal manipulation is required, that the forceps could be applied quickly through a very slightly dilated os uteri, and traction maintained by application of a light weight. It could be used in most of these cases and should take the place of vaginal plugging or bipolar version. In the management of the third stage of labour control of hæmorrhage was of the greatest importance. Careful observation of the fundus uteri and vaginal introitus was necessary. If persistent loss occurred, an attempt to express the placenta should be made. If unsuccessful, manual removal of the placenta and bimanual uterine compression with the exhibition of pituitrin should be performed. Steady compression as a rule avoided the necessity for uterine packing. Prof. Windeyer illustrated his remarks by showing the results of the last 100 consecutive cases under his care. He did not agree with Sir Comyns Berkeley that vaginal plugging was dangerous; with care risk of sepsis was not great.

Dr. A. M. WILSON (Melbourne) quoted a series of figures from Melbourne obstetric hospitals. Placenta prævia was a comparatively rare complication, he said, and consultant opinion should be obtained in these cases. The patient should be placed in satisfactory surroundings before active surgical treatment was undertaken. Painless causeless hæmorrhage usually indicated the presence of placenta prævia and the procedure to be adopted should be decided on at once. It was rare for such patients to die as a result of their first hæmorrhage and the most serious type was one that had had repeated hæmorrhages. Once diagnosed, termination of the pregnancy must be attempted immediately. Stimulative treatment was often successful. Dr. Wilson advised Caesarean section for the central type of placenta prævia.

These cases should be blood-typed on admission because blood transfusion was so often necessary. Vaginal packing was not advisable owing to the risk of sepsis. If used it should be only a temporary expedient.

With lateral or central placenta prævia Dr. Wilson advised rupture of the membranes and/or the application of Willett's clamp. Breech presentations usually did well if a leg was pulled down and the patient allowed to deliver herself. Bipolar version without extraction was the method of choice for a serious emergency if surgical aid was not available; there was, however, a great infantile mortality. Caesarean section was life-saving in many cases, but it was desirable that the patient should be a good surgical risk. It was an excellent operation in picked cases over 36 weeks of pregnancy. Simpler methods were however, as a rule, safer to the mother.

Dr. LANDER (England) inquired whether placenta prævia was a consequence of toxæmia or a mechanical anatomical mishap. In general practice one had to decide quickly in these cases. He found that the bipolar version sometimes increased the hæmorrhage and was technically difficult. He considered that rupturing the membranes and allowing the free flow of liquor amnii was usually sufficient. He emphasised the value of posture and fundal pressure. Dr. M. ELLIOTT SMITH (Brisbane) supported Prof. Windeyer in his advocacy of plugging, which was no doubt about its value, he said, but in an emergency use was sometimes dangerous because of the lack of asepsis. He had found a high forceps a useful instrument with which to perform a centrally situated placenta.

Dame CONSTANCE D'ARCY (Sydney) considered that Sir Comyns Berkeley for the nine principal cost she stressed. She commended Caesarean section. To finish the operation of choice in central placenta prævia, whilst Dr. Hicks version was very valuable for the emergency. She considered that in Australasia the American influence on obstetric practice preponderantly was stated. She drew attention to the advantages of this as a final anaesthesia in dealing with some difficult cases.

The PRESIDENT agreed that in many cases minor degrees of placenta prævia were over-treated. He advocated Caesarean section in cases over 36 weeks of pregnancy having complete placenta prævia.

Sir COMYNS BERKELEY in reply emphasised that his paper represented not his own experience, but that of a great number of obstetricians. It was most essential that having diagnosed that placenta prævia one should decide upon a method of treatment and carry it out. In general he would advise Caesarean section for the complete cases of rupture of the membranes for the incomplete cases, and watchful observation for cases of lateral and placenta prævia. He advised all members of the section to read his statistical table carefully, when he had no doubt that the best method of approaching such cases could be decided. He agreed with Dr. Wilson that the pregnancy should be terminated as soon as hæmorrhage occurred, but was totally opposed to vaginal plugging.

Summer Time, which commenced in Great Britain, Ireland, the Channel Islands, and the Isle of Man on Sunday, April 14th, will cease on Sunday next, Oct. 6th, at 3 A.M., when the clock will be put back to 2 A.M. The hour 2-3 A.M. Summer time will thus be followed by the hour 2-3 A.M. Greenwich time.

MARGATE AS A HEALTH RESORT

B.H.R.A. CONFERENCE, SEPT. 27TH-29TH

By providing an Indian summer of almost tropical intensity the climate of Margate did much to dispel the idea, if such still exists, that the Thanet coast is so bracing as only to be enjoyable for two or three months at the height of summer. Visitors to the week-end conference were given a cordial welcome from the Mayor and corporation whose hospitable reception included a concert at the Winter Gardens on the Saturday evening and a luncheon at St. George's Hotel on the Sunday.

TOWN PLANNING AT THE SEASIDE

The meetings of the conference began on the Saturday morning; the first subject for discussion being "Town Planning at the Seaside," opened by Mr. CLOUGH WILLIAMS ELLIS, F.R.I.B.A. He emphasised the need for co-ordinate planning in seaside resorts; looking at our coast line as a whole it was evident that the best planned towns were usually found to have been built under the benevolent despotism of some great landed proprietor; unrestrained individual enterprise was certain to result in disorder and ugliness. Those towns were fortunate which possessed streets and squares dating from the Regency or later eighteenth century. Victorian and Edwardian times were the dark ages of architecture and few seaside resorts have escaped the conglomeration of sordid streets and rows of villas which this period perpetrated. Recent years have seen a return of life to architecture, new forms are being discovered, and Acts of Parliament had now vested in local authorities powers which were being used to bring order into the planning of the towns and protection of the beauty spots from the uncontrolled commercialism of the speculative bungalow builder.

Mr. WESLEY DOUGILL, A.M.T.P.I., continuing the discussion, began by referring to the greatly increased population of the coast not only for holidays but for residence. This change has been due in large extent to improvements in road, rail, and air transport; but great has been the exploitation of the coast that the seaboard is being rapidly built up and seekers after unsophisticated resorts are being driven further along the coast until soon they will be chasing a will o' the wisp at Land's End. He suggested that government supervision was necessary to control this change which threatened to end in the building up of many headlands and other beauty spots on the coastline. Caravan and shack colonies should be concentrated in inconspicuous places. Good work is already being done under the Town and Country Planning Act (1932), which has enabled certain municipalities to acquire and zone as open spaces land near their boundaries. The speaker also referred to the advisability of more provision for indoor amusements at the seaside as the British climate is uncertain even in the middle of the summer, and if a longer season is required more must be done to entertain visitors when the beach is too cold.

Mr. E. G. S. ELLIOTT, A.M.T.P.I., directed attention to the importance in a town-planning scheme of the first impression made on the visitor. The railway station should be as near the sea front as possible, as the new arrival will receive a poor impression if he starts with a long taxi drive through mean and sordid streets which give no indication of their proximity to the sea. Aerodromes are becoming increasingly important and should be placed as near

the town as possible; this arrangement not only saves the traveller's time but, as the Germans have discovered, an aerodrome, particularly if surrounded by a park containing restaurants and tea gardens, proves a great attraction to visitors. It is important to note that while the Englishman's appreciation of architecture is negligible he has a passionate love of trees, flowers, parks, and gardens.

CONVALESCENCE ON THE THANET COAST

The subject for the afternoon session was opened by Sir LEONARD HILL who began by saying that, although there are weakly and infirm people who require warmth, a bracing sunny climate is the best for the majority. In the constitution of a bracing climate cooling power is one of the most important factors; this is very great on the top of a cliff on the east coast. Not only the actual temperature but the quality of the ray seems to be important; rays from a bright source such as the sun are more invigorating than those from a dull source. Owing to their relatively large body surface children lose heat quickly when exposed to cold moving air and require not only plenty of food but vigorous exercise to keep warm. Plenty of rest is also essential and when resting they must be kept warm. Swimming increases the heat production about ten times.

Mr. W. GREENWOOD SUTCLIFFE referred to the pioneer work of Lettsom in making Margate the first centre for the treatment of surgical tuberculosis. Rest and a maximum of fresh air and good food had always been the factors which Margate treatment depended on. Until recent years excessive operative treatment followed by extensive sepsis was often encountered. At Margate, extension for the correction of deformity, immobilisation, and an absolute minimum of surgical interference is the rule, and the results obtained are at least as good as those following more modern methods. As regards tuberculous cervical glands more than 90 per cent. disappear with conservative treatment, but if they have been present for more than six months their disappearance without operation is doubtful, and if caseation appears complete removal should be considered. The speaker also referred to the advantages of Margate as a place for convalescence after severe surgical operations.

Dr. H. M. RAVEN described the physical geography of Thanet; a rainfall of 27 in. combined with porous chalky soil and a high sunshine record (1700 hours) combined to give the district a healthy and bracing climate. The speaker thought the hardness of the water, due to calcareous matter, might be beneficial in promoting the calcification of tuberculous lesions. As regards the type of patient to be sent to Thanet, delicate and convalescent children did exceptionally well but caution was necessary with cardiac cases especially in winter and careful medical supervision was essential. The stimulating air of the district is particularly suitable for cases of malnutrition, and statistics from an open-air school for girls sent by the "Save the Children" Fund showed an average increase in weight of 7.68 lb. in three months. Boys, being more active, did not gain so rapidly.

Nervous children and those suffering from chorea are, said Dr. Raven, usually benefited, but certain highly excitable children are over-stimulated and must be transferred to a more relaxing climate. In convalescent homes supervised sun and air baths are of value and children improve much faster when weather conditions permit of this treatment. Sea-bathing is to be recommended with more caution, as when unregulated too long immersion is frequent and

may be deleterious. Paddling he considered to be a frequent cause of chills, especially among the children of visitors who often had their feet wet for hours at a time.

Dr. E. P. POULTON began by referring to the popular idea that, in regard to climate, bracing represents all that is good and relaxing that which is evil. In practice a relaxing climate is required in certain conditions, but owing to the unpleasant association the term sedative is preferable. The speaker considered that the British Health Resorts Association should initiate an inquiry into the climatology of the British Isles; the collection of data and its correlation at a central bureau would help to get away from such medico-popular writing as that the value of the seaside depends on the amount of oxygen (or ozone) in the atmosphere or even on the purity of the air. Sunbathing is the rational treatment for diseases depending on deficiency of sunlight, but Dr. Poulton doubts if perfectly healthy people are wise in attempting to pigment themselves—pigment being a natural protection against the harmful effect of the sun's rays. The value of the sea coast was recognised by Richard Russell (1700-71), who noticed that the fisherfolk were free from scrofulosis and that delicate children returned from the sea "bare-necked, their hair shaved, and tumours of the neck healed and the countenance healthy."

In the general discussion which followed there was some difference of opinion about the relative importance of exposure and infection in the production of the common cold. Several speakers congratulated the municipality of Margate on the progress that has been made in recent years in town planning and in the provision of sheltered places and amusements where entertainment can be found in bad weather.

IRELAND

(FROM OUR OWN CORRESPONDENT)

FEES FOR ADMINISTRATION OF ANÆSTHETICS

THERE has been much discontent throughout the country because of the reduction in the scale of fees previously sanctioned for the administration of anæsthetics in district hospitals. For many years a scale was in existence which, though by no means liberal, was accepted generally by the profession. Early last year the Department of Local Government and Public Health drafted a new scale which was issued to the local authorities with instructions that payments in excess thereof would not be sanctioned. The scale was drafted without notice to, or consultation with, the profession, and without any complaint having been made by the local authorities as to the previous scale. It made drastic reductions in the fees allowed, some of the fees being as low as 7s. 6d.! Protests, in which the local authorities were at one with the profession, were made by medical men all over the country, but the Department remained obdurate. Medical men have been slow to refuse their assistance, hoping that the Department would be willing to enter into discussion with their representatives, but so far this hope has been vain, and there are signs that their patience is wearing down. In County Clare recently, the medical officer of the Scariff district hospital reported to his board that it was impossible to obtain the services of medical men to administer anæsthetics to patients in the institution for the fees specified

by the Department. The Department in reply directed that all patients requiring operations be sent to the county hospital at Ennis, or, if they should be unfit for removal, that the surgeon of the county hospital should be summoned to perform the necessary operation. The board of health refused to adopt this unworkable and costly scheme, and proceeded to appoint an anæsthetist at an annual salary. In attempting to impose a new and inferior scale and in refusing to consider the matter with representatives of the profession, the Department has acted in a harsh and unreasonable way, and if there is a general breakdown as regards the giving of anæsthetics in district hospitals, the responsibility will rest with the Department.

THE DISPENSARY MEDICAL OFFICER'S RESIDENCE

It is a regulation of the Department of Local Government and Public Health that the dispensary medical officer should reside within his district. It is clear that for one reason or another it may not always be wise to insist on the letter of their rule, and it not infrequently happens that the best point for the residence from the point of view of the convenience of the patients is outside the geographical bounds of the district. The Department has in the main used a wise discretion in the application of the rule, and there is rarely cause for complaint. A curious position, however, is likely to arise in County Roscommon. The dispensary medical officer of the Kiltoom district resides and has resided for years in the town of Athlone, just outside his district. The Department refuses to sanction this arrangement any longer, and has directed the board of health to choose a site and build a residence within the district. To this course the ratepayers object, urging that the salary and private practice of the district would not attract an experienced doctor, and that the people of the district would thereby suffer. In this view the chairman of the board of health concurred, stating that if the doctor was compelled to live in the district and pay an economic rent for his residence, in the event of a vacancy they would find no applicants to fill it. It was stated also that in the adjoining Brideswell district there had been a succession of 72 doctors in 70 years!

HEALTH OF COUNTY DUBLIN

In his annual report for 1934 Dr. J. A. Harbison, medical officer of health for County Dublin, records a steady increase in the birth-rate and a fall in infant mortality. The general death-rate had increased slightly from 13.8 per 1000 in 1933 to 13.9 in 1934. Heart disease was by far the largest individual cause of death and accounted for one-sixth of the total number of deaths. The number of deaths from cancer had fallen from 137 to 122 in the year, and there was also a fall in the number of deaths from infectious diseases, but deaths from measles numbered 47, showing a higher total than all the deaths from acute notifiable infectious diseases together. Speaking of tuberculosis, Dr. Harbison states that there was considerable difficulty in obtaining sufficient beds for patients, particularly for chronic and advanced cases. He remarks that too many of the patients failed to present themselves for examination until the disease was far advanced. There was no appreciable reduction in the mortality from tuberculosis in the past four years. As to housing, apparently the worst housing conditions exist in the suburban areas, where there are numerous collections of badly lighted,

(Continued at foot of opposite page)

POST-GRADUATE LECTURES

LAST week-end several of the London teaching hospitals held short post-graduate courses, and as in previous years we propose to publish abstracts of some of the lectures delivered. Of the three which are summarised below, those of Dr. Miller and Mr. Williams were given at St. Mary's and Prof. Wright's at the Middlesex Hospital.

SLIMMING PROBLEMS IN CHILDREN AND ADOLESCENTS

(Dr. REGINALD MILLER)

By the use of the term "slimming problems" I intend to convey the fact that I do not propose to deal merely with the treatment of obesity. There is a good deal more of interest in the subject than that. Prevailing fashions have led to much that is extravagant in thought and practice in these matters, and perhaps our profession has not altogether escaped these influences. In one respect the patients whom we see on account of their supposed over-weight differ from the ordinary run of cases in that at the back of their trouble there is rarely any physical disease or disorder, and in slimming problems the psychology of the patient comes to the front. It is, perhaps, a pity that the degree of slimness at the moment demanded by fashion does mean in many instances real under-nourishment and a consequent strain on physical and nervous health. Most people may be said to have an optimum weight and this is not necessarily their minimum or maximum weight. Sometimes by remembering this we can be of help to those who consult us.

It is convenient to consider the subject in four age-groups: (1) infancy; (2) childhood to puberty; (3) puberty to adolescence; (4) adolescence.

1. *Infancy*.—Towards the end of infancy, before the child begins to walk, there is a natural fat period. Provided that rickets, anaemia, and hypothyroidism are absent, the condition is harmless though it may delay slightly the onset of walking. The condition should generally, therefore, be left alone. If for any special reason it is necessary to treat the over-weight it should be done by reducing the intake of fat and sugar rather than by cutting down the bulk of the food taken.

2. *Childhood to Puberty*.—During childhood up to the age of puberty there are many over-fat children. An attempt may be made to class them into three groups—endogenous, exogenous, and endocrine; but

(Continued from previous page)

damp, and unhealthy houses which are huddled together. Even in State-provided houses, as in labourers' cottages, there are many instances of overcrowding, a new generation having sprung up since any appreciable effort in housing has been made. So short is the supply of houses that many people are forced to occupy houses at rents far beyond their means. Dr. Harbison knows that many families are paying rents of 10s. to 15s. per week out of a total weekly income of 25s. He makes a strong case for town planning which "has a biological significance as well as a structural and economic one."

for individual cases it is none too successful. Unfortunately doctors are apt to focus upon the endocrine possibilities and commonly diagnose Fröhlich's syndrome on totally insufficient grounds. This syndrome is in reality a very rare condition and mere fatness is not enough for its diagnosis. Some degree of physical or genital infantilism should be present, and although the second is difficult to recognise before puberty (though often diagnosed), delay in ossification in bones can be sought for in order to substantiate physical infantilism. Fröhlich's syndrome is due to organic disease affecting the pituitary and supposed to cause deficient secretion of the posterior lobe. Most of the over-weight children at this age are large in stature and powerful in build as well as fat, and if there is a pituitary influence it is more likely to be an excess of anterior-lobe secretion rather than a deficiency in posterior-lobe secretion. Caution should be exercised before diagnosing Fröhlich's syndrome, as later the punctual appearance of puberty may show the diagnosis to have been wrong. Treatment at this age is rarely necessary, and the use of thyroid as a routine measure is to be deprecated.

3. *Puberty to Adolescence*.—Even after puberty is well established a few children, chiefly girls, remain over-fat during their last years at boarding-school. We hear much of the woes they are supposed to suffer from the taunts of their school-fellows, but this is quite exceptional. Usually these fat girls are very popular and are jolly, happy, and prosperous folk. The great difficulty is to get them to take the slightest interest in their weights or figures while they are at school; it is usually the parents who are anxious. Such cases will have sometimes to be dieted even while at school, and this needs to be done carefully. The girl will be probably leading a very active life and may be working for examinations, and if the diet is so restricted that she is perpetually hungry her work will suffer and she will be rendered miserable and bad-tempered. The fats and carbohydrates in the diet must be ruthlessly cut down, and the girl fed on proteins with plenty of green vegetables, salads, fruit and cheese, with bread substitutes and saxon. Such a diet, although dull, is not unpalatable. Its chief drawbacks are the absence of bread and butter, and the fact that it cannot be varied by occasional feasts. Of it the child may eat, if not *ad lib.*, at least enough to be satisfied.

4. *Adolescence*.—After leaving school the adolescent who is over-weight generally becomes interested in her appearance and if then she slims sanely all is well. Occasionally, however, the slimming process gets altogether out of hand and the girl reduces herself to a condition of physical exhaustion and nervous prostration. Such cases are all very much alike, the patient swearing that she feels well and that she is better and happier on the restricted diet; but her cold extremities, her slow pulse, her excessive emotionalism and bad temper belie her words. Although she starts on the process of slimming voluntarily it seems to develop into an hysterical obsession, and the ultimate state of the patient may give rise to real anxiety. In the treatment of such cases it is important that sooner or later the girl should be made to face up to the reality of her condition and the unwisdom of such underfeeding, for she is not cured in any real sense until she takes a natural amount of food for natural reasons.

RECENT WORK ON VISCERAL SENSIBILITY

(PROF. SAMSON WRIGHT)

I HAVE selected the subject of visceral sensibility to talk about because it deeply interests both myself as a physiologist and you as clinicians; it is not an easy problem for either of us to study because experiments on animals suffer from obvious limitations, and observations made in the course of disease are often difficult to interpret. Experience has shown that individual organs must be investigated separately as there are few conclusions that apply equally to them all. I believe that a good deal of the present confusion is due to the hasty attempts which have been made to argue by analogy from one viscus to another.

You are all familiar with Mackenzie's studies on the heart. He showed that certain disorders of the myocardium are associated with no local or visceral pain, but give rise to referred pain in the distribution of certain posterior nerve-roots. As far as we know the cardiac pain-afferents enter the upper thoracic posterior nerve-roots only, but it is well recognised that the pain may be much more widely distributed and be felt in the neck or jaws or abdomen. I have suggested that this phenomenon be called "sensory irradiation," and there is some evidence that the extent of the irradiation may be related to the severity of the heart lesion. The pain-afferents are thought to produce some obscure change in the spinal cord to set up a so-called "irritable focus" which modifies the character of the impulses entering from the skin and muscles in the disturbed segments and so produces tenderness. Lastly, reflex motor effects like intense muscular contraction (thoracic constriction) or salivation may occur. The work of Lewis on the production of pain in an ischaemic-exercised limb seems to prove that muscular activity liberates an agent—the so-called P-factor—which can stimulate sensory nerve-endings and arouse pain. He believes that under normal conditions of the circulation the P-factor is removed as rapidly as it is formed, and never accumulates to threshold concentration; but if the circulation is inadequate it is retained in the tissues and pain results. When a tissue breaks down as a result of infarction the same factor is probably produced. It seems pretty certain now that typical cardiac pain is always produced by ischaemia either absolute or relative—that is by coronary thrombosis or by a coronary flow which is inadequate for the current needs of the heart—and that Lewis's chemical factor is the stimulating agent at work.

I would now like to draw your attention to some very convincing and illuminating experiments which have been carried out in recent years by Capps in America and which I think have greatly increased our knowledge of the sensibility of the serous membranes—the pleura, pericardium, and peritoneum. His pleural studies have been carried out as follows: In cases of pleural effusion he pushes a hollow trocar through the chest wall into the pleural cavity; before much fluid escapes a long stiff silver wire is passed through the cannula and brought into contact with various aspects of the pleural membrane. He found that the *visceral* pleura which lines the lung is entirely devoid of pain sense. Pressure on the *parietal* pleura, however, gives rise to a sharp pain which is located with considerable accuracy over or near the site of stimulation. The sensory nerves involved are of course the intercostals which richly supply this region of the pleura. His most interesting observations were made on the *diaphragmatic* pleura. As

you know, the central part of the diaphragm is supplied by the phrenic and the afferents from this region enter mainly the third and fourth cervical posterior nerve-roots; the peripheral part of the diaphragm is supplied by the lower intercostals and the afferents pass into the seventh to the twelfth thoracic posterior nerve-roots. Stimulation of the diaphragm never produces local pain; it is always referred. From the central diaphragm the pain is referred to the neck and the upper part of the shoulder; from the peripheral diaphragm to the lower thorax, the lumbar region, or abdomen. The stronger the degree of pleural stimulation the more widespread is the distribution of the referred pain, and it may sometimes extend to the *other* side of the body too. Furthermore, the pain is associated with *tenderness* and *muscular rigidity*. I think you will agree that this work on the diaphragmatic pleura forms a most convincing demonstration of the general truth of Mackenzie's notions.

In the case of the pericardium, however, the findings are rather different. The lower part of the fibrous pericardium is supplied by the phrenic and gives rise to referred neck pain, but the inner surfaces of the pericardial sac are seemingly painless. Capps suggests that when severe pain accompanies pericarditis it is due to one of three things—involvement of the mediastinal tissues or of the diaphragmatic pleura or interference with the coronary flow.

The findings in the case of the peritoneum are identical with those with the pleura. The visceral peritoneum is insensitive; the parietal peritoneum gives *localised* pain associated with tenderness and muscular rigidity; the diaphragmatic peritoneum gives rise to referred pain in the neck or lower part of the body wall.

You must remember, however, that the hollow viscera are not insensitive to all stimuli. Pain can be set up by pressure changes which may result either from excessive distension or violent contraction of the muscle wall. There is still much dispute whether the pain is felt vaguely in the affected viscus or is referred to the surface of the body; most people, contrary to Mackenzie, hold the former view. The evidence suggests that so long as the disorder is limited to the viscus or to its visceral peritoneum there is *no tenderness or rigidity*. These latter symptoms only develop when the parietal peritoneum is affected. This matter I believe still requires much investigation and its practical importance is obvious; it is eminently a problem which you are fitted for and have the opportunities to clarify.

HORMONE THERAPY IN GYNÆCOLOGY

(MR. LESLIE WILLIAMS)

THE hormones of most practical value in gynaecology are oestrin, progestin, and prolactin B.

OESTRIN

Let us consider *oestrin* first. Secreted by the ovarian follicles, it has a periodic stimulant action on the endometrium of the uterus, greatest in the first half of each intermenstrual phase. But it also has a vegetative action on the growth of the genital organs. This is seen particularly at puberty, when, in consequence of the development of egg-bearing follicles and the appearance of oestrin, the genital organs grow from the infantile to the adult condition. Hence we can at once visualise two therapeutic uses for oestrin: (1) to initiate or restore the normal menstrual cycle; and (2) to bring about development of organs which are under-developed.

One must realise, however, that to produce real effects with ovarian hormones, we must use much bigger doses than was at first envisaged. When I was associated (in the minor capacity of operating surgeon) with Parkes and Zuckerman in their experiments with oestrin, I was able to see at first hand the evidence that enabled Parkes to calculate that, from the weight of the adult woman as compared with the weight of a baboon, the dosage necessary for the adult woman would be in the neighbourhood of half a million mouse units. This surprisingly accurate forecast has been, as we shall see, strikingly corroborated by the work of Kaufmann.

Now 500,000 mouse units of oestrin, as it was then prepared, was an extremely costly dose and the next step towards the effective use of the remedy came from the chemists, the most valuable work in this country being contributed by Prof. E. C. Dodds. The first compound isolated in the crystalline form was found by Doisy and proved to be keto-hydroxy oestrin. All sorts of derivatives were developed and investigated, and among the few I need mention here comes di-hydro oestrin, which is produced by hydrogenation of oestrin. This substance is five times as active as keto-hydroxy oestrin and one gramme of the crystalline substance equals 50 million international units, as compared with 10 million for the keto-hydroxy oestrin. The manufacturing chemists have supplied an oily solution of di-hydro oestrin benzoate in ampoule form, each 1 c.cm. ampoule being equal to 250,000 international units.

This di-hydro oestrin is allied chemically to certain hydrocarbons containing the phenanthrene ring, some of whose derivatives are cancer producing—as in tar cancer. And we may think for a moment on the similarity between oestrus manifestations (e.g., squamous-celled proliferation in the vagina) and the formation of cancer. But we have been reassured that carcinogenesis is not a practical likelihood from the use of oestrin derivatives supplied by the various firms of chemists.

Through the work of such firms as British Drug Houses, Organon, and Schering, we now have, available for therapeutic use, oestrin in convenient bulk for administration in doses of 1000, 10,000, or 100,000 international units. At the same time one cannot help regretting the fact that there are on the market all sorts of preparations with wonderful names, but without any clear indication of the dosage in any standard unit, and without any accurate indication of the specific hormone on which their action is supposed to depend. For myself I can see no value in such preparations and do not think any useful advance in knowledge or in therapeutic benefit will come from their employment. Furthermore, it must be remembered that oral administration of even the best of the hormone preparations is about one-thirtieth as effective as intramuscular injection. As for the dry gland preparations (except thyroid), and the plurigland blunderbuss tablets, and so forth, they are, relatively speaking, useless.

And now to the consideration of the practical use of hormone preparations. Perhaps the most striking case is that in which menstruation has been restored in a woman who has for some reason or other developed secondary amenorrhœa. Kaufmann of Berlin has produced the most notable work on this subject and he says categorically: "with few exceptions I succeeded in producing true menstrual bleeding every time in 40 patients." By true menstrual bleeding he means normal menstruation from a normally proliferated endometrium as demonstrated

by curetting. His technique is to give on the first, fourth, eighth, eleventh, and fifteenth day of the month 250,000 international units of oestrin. Then a pause of three days. Then 7 rabbit units of corpus luteum hormone (progesterin) daily for five days. Menstruation should start a day or so later and can be expected with fair confidence even in a castrated girl.

At St. Mary's Hospital we have not been quite so successful; but about half the cases have responded favourably. Here we do not give the full treatment as recommended by Kaufmann but, following the suggestion of other workers in this country, have reduced the dose of corpus luteum hormone from 7 to 1 rabbit unit.

Now what happens when treatment is stopped? In the castrate woman as a rule nothing; but in the case of secondary amenorrhœa regular spontaneous menstruation may take place for several months. Where there has been severe or prolonged disturbance of the ovarian cycle it is preferable to give the treatment over two or three months, and even then amenorrhœa is likely to reappear after perhaps a few months of normal menstruation.

In young women who have had the misfortune to be castrated it is of course unnecessary to produce menstruation if the aim is merely the relief of their symptoms. Such women may have very severe "flushes," sweats, and the like. In these cases and in women who have severe menopausal symptoms at the natural age, it is said that most striking therapeutic results can be secured. In such circumstances Kaufmann recommends big doses for the first two weeks, 500,000 international units to be given twice weekly. Then the dose should be reduced to 100,000 units weekly. And, I imagine, still further reduction could then be tried. After three months this treatment is suspended.

One other menopausal symptom occurring either in castrate women or after the natural menopause and deserving of individual consideration is itching. This symptom, occasionally so very troublesome, may be vulval or general, and usually responds well to treatment with oestrin. The first few doses, however, may aggravate the condition. So be prepared for such a temporary set-back and continue with the treatment. But you must give big doses. I suggest that 100,000 units of some preparation of oestrin be given twice weekly. Even without making use of these massive doses, many menopausal cases improve considerably on doses of 10,000 units of oestrin weekly. Flushes particularly are greatly benefited and mental depression often relieved.

My next mention of oestrin for therapeutic purposes is in reference to scanty menstruation in young women. Oestrin in doses of 250,000 international units should be given on the third, sixth, ninth, and twelfth days following a period—i.e., in the proliferative phase. Kaufmann states that "if during treatment normally marked bleeding is produced, then, after an average of three courses of treatment, we may expect bleeding to remain normal after the cessation of treatment."

Oestrin has also been used in attempts to induce labour, but is not valuable for this. But Leyland Robinson and his colleagues report (Brit. Med. Jour., 1935, i., 749) that it is extremely useful in preparing a uterus which contains a carneous mole or a dead pregnancy to respond to the stimulation of pituitary extract and quinine and so to expel its contents. For this purpose they treated cases with doses varying from 100,000 to 3,000,000 units of oestrin and about four days later gave the quinine and pituitary.

Their results were satisfactory and their findings suggested that oestrin may perhaps prove useful in the treatment of primary uterine inertia. But it is too early to speak of this yet. Oestrin is also suggested for vomiting of pregnancy and 10,000 units three times a week has been indicated as a suitable dosage.

Sterility and menstrual headache have been spoken of as responding to treatment by oestrin, but I have no personal experience of this. But I have tried it for vulvo-vaginitis in young children as suggested by Nabarro and Signy in THE LANCET of March 16th, 1935, and thought that it did good.

It may have been noticed that though I have dealt with reproduction of menstruation in cases of secondary amenorrhœa, I have not mentioned oestrin and progestin therapy for primary amenorrhœa and genital hypoplasia. If anybody desires to treat such cases, the technique for the treatment of secondary amenorrhœa is adopted and is repeated over and over again. But it is a long and a tedious and expensive business.

PROGESTIN

Another therapeutic use of the ovarian hormones is that of the corpus luteum hormone for the control of irregular or excessive uterine hæmorrhage. We used to call this hæmorrhage the result of "endometritis," but we now believe it is due to cystic hyperplasia of the endometrium resulting from excessive oestrin production. The modern conception is that the ripe and ripening follicles fail to rupture, and so fail to become converted into corpora lutea. Therefore they continue to produce oestrin in excess and no "progestin" appears. This endometrial condition can be produced experimentally in castrated women, but very large doses of oestrin are required—about 5 million units spread over eight weeks. And to cure the experimental condition thus produced, very large doses of corpus luteum hormone are required—up to 90 rabbit units. Clinically, however, smaller doses work well and 20 rabbit units, spread over six days, may be expected to succeed.

Therefore the obvious clinical treatment is to give corpus luteum hormone, and on Kaufmann's recommendation 15 rabbit units spread over five days may be taken as a reasonable standard. However, some cases do not respond to large or small doses. These cases appear usually to have a large follicular cyst, resection of which may reasonably be entertained.

This is a convenient moment to mention the difficulty that the clinician experiences when dealing with all these "units." Roughly speaking one rat unit = 5 mouse units = 25 international units. But unfortunately this is by no means always true, since certain hormones standardised first against mice and then against rats will not conform to the above standard. And rabbit units are different again! So the clinician is compelled to memorise arbitrary doses of so many international units for this and so many rabbit units for that and so on. Personally I find it all very difficult. To illustrate this, I have already given Kaufmann's recommendation for the treatment of cystic endometrial hyperplasia causing menorrhagia. For the same condition the Organon firm recommend only "five rabbit units spread over several days just before the flow is expected." And, as we shall see, another line of treatment is to give not corpus luteum hormone itself, but the anterior pituitary hormone which stimulates the production of corpus luteum which is usually standardised in rat units.

After this digression I must return to the corpus luteum hormone. In addition to menorrhagia, cases of habitual abortion do very well under this remedy. Of course it is necessary to eliminate any cause such as syphilis, nephritis, a badly retroflexed uterus,

or an extensive cervical tear. And one must give the necessary advice as to avoidance of muscular effort, coitus, &c. But when this is done cases which have had a series of miscarriages can often, I might say usually, be brought safely to term by the bi-weekly intramuscular injection of 1 rabbit unit of corpus luteum hormone from as early a date in pregnancy as possible to the thirty-second week. We have found it advisable to stop the injections then, since otherwise some women see fit to try to prolong the period of gestation beyond the normal 40 weeks.

PROLAN B

But it is expensive. Each ampoule (of 2 rabbit units) costs about half a guinea and in view of the expense, and because until recently corpus luteum hormone preparations were unreliable and badly standardised, we at St. Mary's have been using as an alternative the gonadotropic hormone from the anterior part of the pituitary gland. We have aimed at using prolan B, but nothing can be gained from discussing whether this is radically different from prolan A. The commercial preparations we have used are Antuitrin S (Parke Davis) or Pregnyl (Organon).

We have treated a large number of cases of habitual miscarriage with antuitrin S with most gratifying results. Our dosage has been 1 c.cm. intramuscularly twice a week. Now it is believed that antuitrin S loses its activity very rapidly and our success may have depended on the large number of cases treated requiring constantly renewed supplies of the preparation so that it was always fairly recently prepared. For the practitioner using it only occasionally antuitrin S cannot be recommended since it is probably inert after a short time of storage. It may be shown by experience that pregnyl is therefore preferable for use in individual cases since its preparation and method of dispensing make for the retention of its active properties. If therefore any of you propose to try pregnyl for any cases of habitual miscarriage without any ascertainable cause, I recommend you to give 30 rat units intramuscularly twice weekly at first and to increase to 100 such units if no unpleasant symptoms are produced. Let the treatment be started as early in pregnancy as possible and be continued until the thirty-second week. And now let me refer to the use of gonadotropic hormone as an alternative to using corpus luteum hormone in the treatment of menorrhagia in women of, say, 35 years of age. A suggested line of treatment is 100 rat units of this type of hormone (say pregnyl) intramuscularly three times in the ten days before a period and 30 rat units daily during that time.

Finally cases of spasmodic dysmenorrhœa may be presumed to be due to excessive and colicky uterine action. Theoretically uterine contractions should be diminished by the action of the corpus luteum. Therefore it has been recommended that cases of dysmenorrhœa in young women should be treated by the administration of corpus luteum hormone in doses of, say, 2 rabbit units two days before the pain and repeated on the first day; or the corpus luteum stimulating hormone may be used e.g., pregnyl 30 rat units daily, starting two days before the pain is expected.

SUMMARY

To recapitulate. (1) For severe menopausal symptoms in a young oophorectomised woman: 500,000 international units of oestrin twice weekly reduced later to 100,000 units weekly. Stop at the end of three months. (2) For less severe menopause cases: 10,000 units of oestrin weekly. (3) For itching at the menopause: 100,000 units of

œstrin twice weekly. (4) For scanty menstruation in young women: 250,000 units on third, sixth, ninth, and twelfth days following a period. Three courses of treatment in all. (5) To induce labour in cases of retained dead pregnancy: 500,000 units of œstrin split into 5 doses with intervals of eight hours followed four days later by quinine sulphate, 3 doses of ten grains at hourly intervals, and 0.5 c.cm. of pituitrin, 4 doses at hourly intervals. (6) For vomiting of pregnancy: 10,000 units of œstrin thrice weekly. But I have no personal experience of the results of this treatment. (7) For "metropathia hæmorrhagica"—a period of amenorrhœa followed by prolonged profuse uterine hæmorrhage—and for menorrhagia in young women: 15 rabbit units of corpus luteum hormone spread over the five days before a period if there is any regularity, or given during the time of hæmor-

rhage in other cases. Alternatively: the gonadotropic hormone preparations such as pregnyl, 3 or more doses of 100 rat units, in the ten days preceding the flow (if regular) or 1 c.cm. of antuitrin S twice weekly. (8) Habitual abortion: 1 rabbit unit of corpus luteum hormone or 1 c.cm. of antuitrin S twice weekly from say the eighth to the thirty-second week of gestation. As an alternative to antuitrin S, the preparation pregnyl, 30 rat units twice weekly, increased to 100 units twice weekly if no unpleasant symptoms are produced. (9) Spasmodic dysmenorrhœa: corpus luteum hormone, 2 rabbit units two days before the pain and 2 more rabbit units at the onset of menstruation. Alternatively, one of the prolan B preparations (gonadotropic hormone) 30 rat units daily, starting two days before the pain is expected.

OPENING OF THE MEDICAL SCHOOLS

THIS week has seen the beginning of the academic year at some of the schools of medicine and allied sciences in London. Below we print extracts from Sir Gowland Hopkins's address to students at the College of the Pharmaceutical Society, and from "Ian Hay's" address at Westminster Hospital.

PREPARATION OF THE PHARMACIST

BY SIR GOWLAND HOPKINS, O.M., F.R.C.P., P.R.S.
PROFESSOR OF BIOCHEMISTRY IN THE UNIVERSITY OF CAMBRIDGE

THE more responsible the calling the higher should be its standards, alike in education and in practice, and British pharmacy is surely fortunate in possessing, in the Pharmaceutical Society of London, a representative body of which the aim—to-day so successfully fulfilled—has been to maintain standards which make for the dignity of the calling, and earn for it the respect of the public.

I would like to speak first in praise of the Society's educational policy, of which the thoroughness and efficiency are remarkable. The standards it imposes are undeniably high, and I am aware that there are some at least who, placing emphasis on the special conditions in which the average pharmacist in this country practises his calling and the peculiar commercial services which the British public is accustomed to expect from him, maintain that such extensive educational demands—on the scientific side at any rate—may outrun the needs of practice, and impose an undue burden on the efforts and time of the beginner. If among my audience there chance to be any who take this standpoint, I hope they will bear with me while I advocate a view which is entirely different.

Educational problems as a whole are, of course, too big to be discussed here; but there is an aspect of policy I would like you to consider as being of importance in the general tenor of my remarks. How soon should the vocational element enter into educational courses? It is often urged that the true function of education is to train the mind to think rightly rather than to store it with facts. There is of course much truth in this, especially in the case of children and adolescents. But technical or vocational teaching has to follow at some moment, and the greater the knowledge required for a chosen career the longer the time which must be spent upon it. Vocational needs must not make the teaching

of a science so one-sided that the student risks missing the intellectual stimulus which the great generalisations of science provide. I am personally sure however that the skilful teacher of students whose ultimate aim is to apply science in practice can illustrate general principles adequately while selecting facts and aspects which have a permanent vocational value.

For the encouragement of the average student it is important that the reality of this permanent value should be part of his faith. I have been in touch with medical students for more than half a century, and have taught them for a great part of that period. Throughout I have realised, as every teacher of the pre-clinical sciences has to realise, that save for a select group, which one must admit is growing larger to-day, medical students are convinced that the three years spent on their pre-clinical studies represent a painful delay in their approach to realities, which only come, they believe, when contact with patients is reached. I have no doubt that many students of pharmacy, though their ultimate aims are different, have analogous feelings. This attitude is after all based on an innate characteristic of the Anglo-Saxon race which loves action better than thought, and practice better than theory. It is a quality which has served the race well politically, for in politics and national adventures it is character that counts, and, as we were long ago reminded, action may be hampered by the "pale caste of thought." But this same quality has sometimes kept us from being in the van of intellectual, and, no less, of commercial progress. It was because it had become really scientific that the medical knowledge of another country received for a long period, and up to the time of the war, the greatest respect of the world, and it was because its chemists were so thoroughly trained in theory that the same country obtained, among other similar advantages, a long lead in the production of synthetic drugs, which, rightly or wrongly, brought it enormous profits. That same country has now replaced its former respect for intellectual effort by the crudest form of nationalism, which ignores the claims of the intellect. We ourselves can profit just now in some activities quite legitimately by cultivating the earlier enthusiasms of that country while it is otherwise engaged.

All that I have so far said has been in preparation for a more succinct statement of certain articles of my personal faith.

First I believe that for the student of pharmacy, no less than for the student of medicine, the chief

gain from the science teaching which must precede practical activities is in the scientific attitude of mind which it creates, and in the special intellectual background it provides which, even when a mass of detail is forgotten, remains a valuable possession. But I also believe that when teachers and examiners are wise, this most desirable result can be obtained by teaching which is essentially vocational, and largely confined to aspects of scientific knowledge which are of permanent and practical value.

A more recently acquired article of faith with me is one which the present occasion has established. I have been reading the educational pages in the Society's calendar, and, while recognising my limitations as a critic, I feel justified in my belief that those pages reveal a policy based upon sound judgment. The syllabuses provide, in my opinion, just that amount of vocational reference which is so encouraging to the student, without lowering the intellectual value of the courses.

I certainly find myself among those who wholly approve of those additions which are now about to take their place in the curriculum. That the biological teaching should at this time be extended on its animal side is only logical. When vegetable drugs and preparations of vegetable origin bulked so largely in the pharmacopoeia, the prominence of botany in the curriculum was justified. With the immense development of glandular or hormonal therapy conditions have altered. It is clearly desirable that all who may have concern with the preparation and the standardising of organic therapeutic preparations and the distribution of the countless proprietary preparations of this class, should possess, no less than those who prescribe them, an adequate knowledge of the nature and functions of the various organs from which they are derived, as well as of the bodily functions they control.

Scarcely different is the case of vitamins; indeed it is nearly, if not quite, justifiable to look upon a vitamin as a hormone which the body cannot make for itself, or on a hormone as a vitamin which it does make for itself.

The trouble indeed for all of us who, from any standpoint, have to think about or deal with hormones and vitamins, whether as physiologist, biochemist, clinician, or pharmacist, is the present great complexity in the facts concerning them. Knowledge concerning the control of the body by a multiplicity of hormones with complicated inter-relations is growing daily, and the literature dealing with research on vitamins has of late contained as many as a thousand papers in a year. Only the specialist can deal with such an output; but the fact that substances of the kind are intruding into therapeutics in such an overwhelming way makes it highly desirable that the pharmacist should be aware of the essential facts relating to their origin, distribution, and action, as well as full acquaintance with their chemical properties. It is for this reason that I think the introduction of animal physiology into the courses of the college is so justifiable and so timely. In thus widening the ground of study those responsible have shown themselves to be courageous as well as wise.

Students who are about to begin their college courses may be feeling to-day that they have heavy tasks ahead; but one may remark here that all who hereafter obtain a major qualification in pharmacy will have whatever satisfaction is involved in knowing that the difference between their own scientific training and that of the average medical student is approaching a vanishing-point.

I suppose that any who harbour doubts concerning the practical value to the pharmaceutical calling at large of a somewhat exacting scientific curriculum may also be inclined to think that the encouragement of research is something remote from the Society's essential functions, and may even feel that the expenditure it involves is not justified. If that view has to-day any supporters I should be very happy if any words of mine could modify it.

I am one of those—and they are many—who believe that in every centre where science is taught research should be active. It is no theoretical view, but a belief based upon wide experience that the pursuance of research within a department vitalises its teaching. It compels the teacher to keep in touch with progress, and keeps his mind alert. It creates an atmosphere from which every student directly and indirectly benefits. Where research is absent teaching is apt to become stereotyped, unprogressive, and, very often, dull. All concerned I think, whatever they may feel about the amount of college teaching to be desired, will wish that whatever is taught should be taught well.

Apart from this influence of research upon teaching, the publication of original work from any department awakens the interest of the scientific world in that department, makes it known and gives it distinction.

If anyone were inclined to say to me at this point "you have been speaking as an idealist, ignoring as idealists are apt to do the many problems and issues which dominate practical life," I should answer that policies which seem idealistic to-day are apt to become realistic enough to-morrow. In these times of social and economic changes only one prophecy can be safely made concerning the future of pharmaceutical practice in this country—namely, that it too will suffer changes.

Many of the younger members of the calling look, I am sure, to its becoming, in a more complete and secure sense than now, a profession. If trade be a calling in which material goods are sold and a profession one in which knowledge is sold—and this seems to be one essential difference between them—then I am sure that the professional side of pharmacy is fated greatly to increase in this country.

It is difficult now as always for those who serve the public to avoid supplying it with what it demands. The general public to-day, and not its humbler sections alone, is for the most part too ignorant to be protected from the influence of the advertisements incessantly before its eyes, which proclaim the supposed merits of a crowd of quack nostrums or expensive proprietary articles of little real value. There are many individual pharmacists to-day who I know do their best to protect it from such, and there are committees in being to-day which are considering possible remedies for the evil. But the problem involved in combating it, whether by State action or otherwise, is an extremely difficult one, as all who face it come to realise.

But biological science is gaining a foothold in general education. It is beginning in schools and is increasing its influence in the universities. The time is not far distant when even average members of the community will know much more about their bodies and their bodily functions than they know to-day, and will no longer display the faith which is born of ignorance. When ill they will of course go to the medical man for diagnosis and for guidance, but I believe that there are matters concerning which they will seek knowledge from the pharmacist to an increasing extent, knowing that it will be knowledge based on scientific truth.

I will even venture to suggest that owing to the increasing specialisation in knowledge and its applications which modern progress demands, the future may see certain readjustments in medical practice which will make it easier for the British pharmacist to assume that more definitely professional status which he now occupies in certain other countries. I touch here, however, on difficult and delicate ground. It would be idle to speculate further on lines such as these; we can but very imperfectly foresee the march of events. But of this I am sure: the status of practical pharmacy in this country will rise with the rise in its standards of education.

THE PRIVILEGED PROFESSION

By MAJOR JOHN HAY BEITH, C.B.E., M.C.

I CANNOT help feeling that to-day human relationships are in the melting-pot. The world is being dehumanised: everywhere the machine is taking the place of the man—or, worse still, the man himself is being practically turned into a machine. From sausages to motor-cars and from motor-cars to wrist-watches, things are now manufactured by a subdivision of labour so elaborate that a man's daily work consists in making one simple muscular movement thousands of times over. To the man that means two things. It makes it unnecessary for him to learn a skilled trade, so that he is deprived of the character-forming processes of education; and it takes away from him the only true incentive to labour, the only true reward of labour—the pride of the creator, the joy of seeing a piece of work begun, continued, and ended by one's own hands. That is gone, and with it has gone a certain percentage of the romance of life and of the humanity of the human family.

How far are these modern tendencies going to affect your profession? How much is the art of healing going to be affected by such things as the mechanisation of human life and the inevitable reactions which must follow in its train?

To that I should reply, very little—less than in any other profession perhaps—and for certain definite reasons.

The first and most important reason is that you cannot mechanise medicine—or surgery, for that matter. The human material upon which you have to work presents too many variations. Your domain will be the very last for the robot to conquer. We shall never see an operating theatre, for example, run on the lines of a Chicago meat-packing establishment—a row of eminent surgeons each making one cut in a different place!

Secondly, you are comparatively immune from the craze for self-expression—or self-advertisement—which is the natural consequence of these tendencies, because you have always safeguarded yourselves as a profession against that kind of thing. It is a sacred tradition of your calling that an individual member of it must never seek personal publicity, or advertise himself in any way. Marvels of successful research may be achieved, miracles of healing may be performed, but the credit will go, as it always has gone, to the profession as a whole and not to the individual—just as in the Great War the British flying men, whenever a battle in the air was won, chalked up the achievement not to the account of this pilot or that, but to the greater glory of the Royal Air Force as a whole. That is a noble tradition. Of course, if a medical man feels the urge for publicity

too strong for him, he has his remedy; he can always go to the market-place and extract teeth or sell quack nostrums to the music of a brass band. But he must go outside the profession to do it.

And then thirdly, the medical profession is one of the few where efficiency and thoroughness, and nothing but efficiency and thoroughness, count. There are no substitutes. In commerce we are told it pays to advertise. That is true; if you advertise hard enough you can sell almost anything. But fortunately that sort of thing is no good to you. If a man dies under your hands, we'll say, by reason of your ignorance of your job, no publicity campaign in the world is ever going to persuade him that he is still alive. So that is that!

Still, as we have already agreed, professional efficiency is not quite everything. You must know not only how to heal people, but how to handle them as well. And here I may be able to give you a few hints. You see, I have never been a doctor, but I have occasionally been a patient; and I agree with you, right away, that patients are a most unreasonable tribe of people—a curse, in fact. You can divide them into many classes, but three will suffice here:—

1. People who are really ill. We need say no more about these, because they give little or no trouble.

2. Patients who are rather ill, but do not believe in doctors, and tell you so quite frankly. You know the man who says to his medical adviser:—

"I only called you in because my wife insisted on it. I know as well as you do that the whole medical business is mere mumbo-jumbo; so don't start taking my blood pressure or doing any conjuring tricks with thermometers and stop-watches. I know how my inside works much better than you do, because it's my inside and not yours. You can leave me some medicine if you like, just to save your face; but I warn you I shall probably throw it out of the window."

That's the bluff, honest, hearty type of patient, the type that has made the name of Englishmen respected all over the world. Well, the simplest and most profitable way to handle this individual is to employ the soft answer. You say:—

"My dear fellow, I agree with every word you utter. Of course, you are quite right; all medicine is nine parts faith and one part colouring matter. You and I both know that, so there is not the slightest use in my prescribing for you in the ordinary way. If I may say so, it is a treat to encounter a patient with whom a doctor can be absolutely frank—a patient who doesn't want things wrapped up in meaningless phrases. You, as of course you probably know without my telling you, are suffering from . . ."

Here you give the name of his disease—in Latin, two longish words, with a false concord thrown in. You add a few scientific terms about reflexes and secretions, and so on, and wind up, if possible, with an impromptu chemical formula. After that, he will simply eat out of your hand.

3. Then we come to a third class of patient—the patient who thinks he is going to die forthwith, if not sooner, and has to be cheered up—or, as they say in a bigger and brighter land than this, kidded along. In that connexion I cannot resist calling, or recalling, to your notice one of W. W. Jacob's stories about that immortal trio, old Sam, Peter Russet, and Ginger Dick. I want to read you an extract. Sam, you may remember, was taken ill.

"And," continues the Night Watchman, who tells the story, "like most 'ealthy men who get a little something the matter with 'em, 'e made sure 'e was dying. 'E sent Peter out for the doctor, and in about 'arf an hour Peter

came back with a sandy-haired young man with red eyelids and a black bag. 'Am I dying, sir?' ses Sam, after the doctor had listened to 'is lungs and 'is 'art, and prodded 'im all over. "We're all dying," ses the doctor—"only some of us'll go off sooner than the others." Peter and Ginger Dick took turns to be with Sam that morning, but in the afternoon the landlady's mother came up to look arter 'im a bit. She sat on a chair by the side of 'is bed and tried to amuse 'im by telling 'im all the death-beds she'd been at, and partikler of one man, the living image of Sam, who passed away in his sleep. It was past ten o'clock when Peter and Ginger came 'ome, but they found poor Sam still awake and sitting up in bed propping 'is eyes open with 'is finger."

Well, that's a good example of how not to do it. What a patient of any kind wants is to be reassured; and that is where technical knowledge will not avail you so much as a cheerful presence and a confident manner. And here, speaking from my experience as a patient, may I drop a hint to future G.P.'s? Humanity fears one thing above all others—the unknown. What frightenes a patient most of all is to have nothing definitely wrong with him. Once a definite cause has been assigned to his ailment, once you have hung a label on it marked in plain figures, and given him something physical to hold on to, he will endure almost anything. So if you can, be explicit with him upon this point, even though you may not have the slightest idea what is the matter with him. Tell him something—anything that will keep his imagination from soaring into the regions of unhealthy speculation. Anything will do; a man is never frightened of a thing he knows all about, or thinks he knows. It is a good plan sometimes to be symbolic—to illustrate the patient's condition, or supposed condition, by some mechanical analogy. You can refer to trouble in his engine-room, or explain that his dynamo requires tuning up, or his accumulators recharging, or that an overstrained spring must be relaxed. Something concrete like that—something he can bite on. Tell him that he has a Rolls-Royce body, but that his petrol pressure is faulty. That will cheer him up much more than to tell him baldly that his malady is functional and not organic. It is a strange thing, the amount of solid comfort a nervous person can derive from having his interior compared to that of a motor-car; but the comfort is there—especially if you tell him he's a Rolls-Royce.

In other words, a good doctor must not only be a good doctor, he must be a good propagandist. We need not go all the way with Samuel Butler, who tells a story somewhere of a man who swallowed a doctor's prescription in the belief that it was an actual medicine, and was immediately cured of an illness; but believe me, the personal touch does count, all the time.

Now I have rambled on nearly long enough. But before I sit down, I want to explain at last why I have selected this title, the Privileged Profession, for my discourse.

The reason is this. The doctor is a privileged person because he enjoys certain privileges denied to the majority of men. He is automatically and simultaneously not only his patient's professional adviser, but his personal friend. A layman may have professional contact with all sorts of professional people; and while respecting them in their professional capacity profoundly, he may dislike them intensely as individuals. I forbear to particularise, except to hint that perhaps you may sometimes be tempted to regard your family lawyer as a bore, or your rector as a bit of a prig, or your stockbroker as a

dangerous crook. But nobody ever disliked his doctor. (I am not referring to dentists, of course.) If you are a man's doctor you are his friend too—and that makes the doctor's profession a unique profession.

The family doctor is a sort of Jekyll and Hyde—or better still, a sort of combined Laurel and Hardy. In one capacity he is just a friend and neighbour, with a golf handicap of 12 (which ought to be 15) and a quite incurable passion for going three no trumps upon an inadequate hand. He is just one of ourselves.

Of course we may be so healthy that the very existence of the healing art is entirely unrealised by us. But time will cure this. In the end, sooner or later, we all come to recognise the doctor's existence—and to discover him in his other capacity.

Now we behold a man transformed. Indeed, he is not a man at all; he is a divinity. We implore his presence; we hail his coming with gratitude and relief, as a frightened child hails the entry of some one into a dark room with a lighted lamp. He takes immediate and entire charge of the situation. He orders us about, and we obey his decrees without question and with trembling eagerness. His presence calms our fears, soothes our pain, and restores our hope.

In due course, when he has healed our sickness, or saved our child, and everybody is growing convalescent and fractious, he reverts to his former status—the status of an agreeable table companion, or an unreliable partner in a foursome, or an amiable gossip. In other words, he is just a neighbour again. But down at the bottom of our hearts remains, and always will remain, the memory of that hour when the black chasm opened at our feet, and we held on to his calm and steady hand and begged him to pull us (or somebody else) back to safety—and he did not fail us.

The doctor is one of our few indispensables in life. He launches us into the world. Upon our voyage therethrough he is periodically summoned on board to assist us in that most delicate operation known as "executing repairs while under steam." And when the end comes at last, and the failing machinery refuses any longer to obey the calls from the bridge, it is he who takes the wheel and pilots us with tenderness and skill to our last anchorage. That seems to me a rather fine privilege.

And there is one other, denied to most of us. In most trades and professions you have to establish your bona fides in some definite way. If you apply for a job, you must produce written references and testimonials. In business transactions people expect estimates and contracts. But if you are a doctor in this country you have only to put up a brass plate on your gate with your name and degree on it, and people will accept you as a matter of course. They will believe your diagnosis, swallow your medicine, and take the items of your bill on trust. They won't pay it, but they won't dispute it. And more than that. They will receive you into the intimacy of their family life; they will leave you alone with their wives and daughters, and entrust you with all that is domestically sacred to them, without question. What exactly does this signify? It signifies in the first place that an English medical degree and an English hospital training are good enough for anybody, and in the second that an English doctor is an English gentleman, anywhere. For generations that tradition has been passed down, and it is your privilege—your last and greatest privilege—to uphold it.

CORRESPONDENCE

FORCEPS

To the Editor of THE LANCET

SIR.—Mr. Wrigley has done a service in drawing attention to the danger of the long forceps commonly in use, but surely he goes too far in wishing to discard them altogether. He admits that in most of the cases where he applied forceps the patient would have delivered herself if left alone, and in hospitals such patients are usually allowed to do so. These are really normal cases, where the low forceps operation is employed to hasten the delivery.

During the year 1934, 211 cases of either contracted pelvis or occipito-posterior position were admitted to the unit of the Glasgow Royal Maternity Hospital, to which I am attached; 109 of these had a spontaneous delivery—a higher proportion than in Mr. Wrigley's series, which consisted presumably mainly of normal cases—with one stillbirth; 44 cases had Caesarean section, with no stillbirth; and 58 had delivery by forceps with 7 stillbirths. There was no maternal death. The last group consists of cases of minor degrees of disproportion and of occipito-posterior position, where there is no clear indication for Caesarean section, so that it will continue to exist despite antenatal care. Such cases need skilled intranatal care, which involves, in many, manipulation of the foetus and delivery by long forceps. The delivery cannot be effected in such cases by short forceps. Although Mr. Wrigley states that "to-day there should but rarely be the necessity to resort to any but the low forceps operation, which consists in the lifting of the foetal head past the perineum," he himself used the long forceps in one out of three occipito-posterior cases.

In the same period, 15 cases of "failed forceps" were admitted to this unit. In only three was Caesarean section indicated in the early stages of labour. Three of the remaining 12 had a spontaneous delivery, and nine delivery by forceps. There were two maternal deaths and six stillbirths. These results compare very unfavourably with the hospital figures already quoted for a similar type of case, and show that the crux of the matter is skilled judgment during labour in each individual case. In the hospital group of 58 cases delivery was effected by forceps because of maternal or foetal distress; in my opinion, delivery by the long axis traction forceps is the most efficient and safest treatment in this type of case, where the delivery could not have been effected by the short forceps. Mr. Wrigley advocates "the anaesthetisation of the patient and a thorough examination to ascertain the cause," but does not indicate the treatment in such cases where short forceps are useless.

His suggestion that the student should be instructed in the use of the short forceps for low forceps delivery is a sound one. It is most important for the student to be impressed with the necessity for post-graduate training before he is competent to deal with complicated cases.

I am, Sir, yours faithfully,

Glasgow, Sept. 28th.

DUGALD BAIRD.

To the Editor of THE LANCET

SIR.—I was much interested in Mr. Wrigley's advocacy of the short curved forceps for dealing with that very large proportion of all forceps deliveries which is undertaken for delay in the second stage with the head on or partly on the perineum. I believe

that the short forceps are now almost unknown in modern hospital practice, but among the voiceless general practitioners they must still survive, especially among those who, like myself, have inherited a family practice and the instruments that formerly pertained to it.

I have carried a pair of short curved forceps very like those figured by Mr. Wrigley for over 30 years, and regard them as perhaps my most precious instrument. I have used them on numberless occasions to terminate a tedious second stage when the pains are too weak to overcome unaided the resistance at the outlet in a reasonable time. They weigh one ounce more than Mr. Wrigley's, were made by Messrs. Muir and Thompson many years ago, and have square wooden handles beautifully fitted so that they stand boiling perfectly well. Each blade measures 9½ inches from tip to the bottom of the handle. The handles are shorter and even more convenient. I think, than those of Mr. Wrigley's forceps, in that they have a broad square shoulder grooved with a space to allow a finger to hook over. They can be slipped on very easily in almost any position of the mother without the buttocks necessarily being brought to the edge of the bed and without any deep anaesthesia. Most of my cases have been conducted single-handed with the help of a nurse and a Junker's apparatus. At one time a foot bellows was provided to work this, but latterly more often the pumping of the chloroform has been kept up by the nurse while I am actually using the forceps.

Should the case prove deceptive owing to unsuspected resistance and elongation of a tightly fitting much-moulded head, it is easy enough to remove the short forceps and, if necessary, to apply the powerful axis-traction forceps, which I also carry, in their stead; but this, of course, is a far more formidable operation and not to be lightly undertaken. It is often better to wait.

I am, Sir, yours faithfully,

Hampstead, N.W., Sept. 30th.

J. L. MORTON.

ARTIFICIAL RESPIRATION

To the Editor of THE LANCET

SIR.—In the leading article, entitled *Artificial Respiration on the Spot*, in your issue of July 20th, you deal very fairly with the subject, but omit to mention an old method that has been employed in drowning cases—viz., inversion of the body, which is often of use though it has been unaccountably condemned by some authorities. In the exhaustive Hunterian lectures on the various methods of artificial respiration (March, 1909) Sir A. Keith says, "The effects of inversion I propose to examine when speaking of postural methods." However, the subject seems to have been overlooked or forgotten by the lecturer as I can find no further mention of it. My attention was drawn to the method by the following case. Several years ago I had just left the swimming bath after my daily bathe when I was called back suddenly to attend to a woman said to be drowning in the adjacent women's swimming bath. I found that the patient was a full grown, heavily built girl subject to epilepsy, who had had a fit while swimming in the bath. It did not take long to get her out of the water and I do not think that she was submerged for many minutes. On being brought to the landing I noticed a good deal of fine froth round the mouth, and so I had the girl held up by

the feet, head down, for the froth to escape—quite a torrent. I was astonished at the amount. When it ceased I performed artificial respiration by Silvester's method, and soon had natural respiration established. I think that this was much facilitated and hastened by preliminary clearing the air passages. Schäfer's method cannot empty the passages of froth and water nearly as thoroughly as inversion, and the inspiratory movements begin by drawing water into the air cells.

After death from drowning the pleural cavities are usually found to contain a lot of water transuded from the lungs—probably mostly post mortem. In cases that recover, the same process probably goes on to some extent. What effect has this on recovery? Is the fluid absorbed more or less easily from the pleura than from the lung?

I am, Sir, yours faithfully,

Somaphoro, South Australia.

F. LUCAS BENHAM.

T.A.B. VACCINE FOR GONORRHOEA

To the Editor of THE LANCET

SIR,—I have been using T.A.B. vaccine and gonococcal vaccine intravenously for some years in the treatment of gonorrhoea, and should like, therefore, to issue a word of warning, for experience has modified my first enthusiasm. As the result of this experience I have found that:

(1) Only young adults of excellent physique should be subjected to the treatment.

(2) Such treatment should never be ambulatory. The patient must be confined to bed. This is mentioned but not stressed by Dr. Bartley.

(3) Severe headache and vomiting may be associated with the temperature produced.

(4) With both substances, but particularly with gonococcal vaccine, a negative phase may occur, and precipitate metastatic lesions rather difficult to explain away.

I personally, therefore, now use the method mainly in persistent chronic vesiculitis or prostatitis, and in the resistant urethritis that is occasionally met with in the female. In such conditions the results obtained are often most striking.

Pyrotherapy is such an extremely valuable weapon in our armamentarium that it would be a pity if its reputation were damaged by indiscriminate use.

I am, Sir, yours faithfully,

J. JOHNSTON ABRAHAM.

Queen Anne-street, W., Sept. 28th.

PLASTER TECHNIQUE IN TREATMENT OF FRACTURES

To the Editor of THE LANCET

SIR,—Mr. Pridie is to be congratulated on his clear and concise description of the methods used by Dr. Lorenz Böhler, of Vienna, in the treatment of fractures. After five years' experience of the non-padded plaster-of-Paris cast in the fracture services of Mr. Harry Platt at the Ancoats Hospital and the Manchester Royal Infirmary, I can testify wholeheartedly to those advantages which Mr. Pridie claims for it. On some details regarding the method of application and on the subsequent treatment, I find myself at variance with him, but these are of minor consequence. My fear lies in the possible inference that this is a method of great safety, which can be easily acquired from a written description, and is suitable for adoption by the general practitioner or surgeon who is called upon to treat an occasional fracture only. As pointed out in your editorial (Sept. 28th) the chief danger is "constriction of the limb." From our own experience we have no doubt that the introduction of the non-padded plaster-of-

Paris cast has increased the incidence of circulatory disturbances of varying degrees of severity. This complication is usually, although not invariably, due to faulty technique. If not recognised immediately and suitably dealt with, it is certain to be followed by the most disastrous results. For this reason alone, I believe that for the present the method should be used only in the larger organised fracture clinics. The technique requires a long apprenticeship before it can be used not only artistically, but with safety to the limb of the patient. It will be remembered that the widespread practice of plating fractures in the smaller surgical centres ultimately brought discredit to this branch of surgery. We fear that the non-padded plaster cast may acquire an equal stigma.

The centralisation of fracture treatment in the larger hospitals is proceeding slowly but surely. Until such clinics are everywhere available, I am convinced that it would be wiser to refrain from advocating specialised methods, which, in inexperienced hands, are fraught with danger.

On the advantages of using a stock plaster bandage, such as the Cellona bandage, in preference to bandages made in the plaster department of the hospital clinic, we have an open mind. After a trial of the Cellona bandage in the fracture service of the Manchester Royal Infirmary, we are not yet convinced that it is cheaper or more effective than the bandages made under the direction of an expert plaster sister.

I am, Sir, yours faithfully,

II. OSMOND CLARKE.

Manchester Royal Infirmary, Oct. 1st.

LIPIODOL AS A THERAPEUTIC AGENT

To the Editor of THE LANCET

SIR.—Prof. Harrower's paper in your last issue interested me greatly, because I have recently observed a similar effect in a totally different type of case.

A woman, aged 50, was admitted to St. Mary's Hospital for Women and Children, E., as a case of syringomyelia and syringobulbia. The more striking physical signs were as follows: complete anaesthesia to heat and cold of the feet and legs, with little alteration of other sensation; almost complete anaesthesia of the front of the chest to painful stimuli and to heat and cold. (The anaesthesia here was so complete that the patient arrived at the hospital with the front of her under-vest covered with blood derived from a painless pricking with the pin of a brooch, which had come undone.) There were no notable trophic changes in the skin of the feet; and the gait was relatively little affected. Speech was coherent, but slow as the result of difficult articulation. There was slight anaesthesia of the face to pin-prick, but not to heat and cold. The only other striking sign was severe, right-sided ptosis.

The general characters suggested that this was not a true case of syringomyelia; and blood was sent for the Wassermann reaction. In the interval between the sending of the blood and the receipt of the report, a cisternal puncture was performed. This was done, partly to demonstrate the condition of the theca, and partly for the benefit of a class of students. There was no hope of a good therapeutic result in my mind at the time. The cisternal puncture was performed *secundum artem*, and 4 c.cm. of lipiodol were injected. Radiograms, taken with the patient in the erect position, showed almost the whole of the lipiodol at the bottom of the theca immediately, but there were small globules scattered about at different levels. As the lipiodol had fallen so well, the patient was put back to bed with only one pillow; and, apart from headache of moderate severity, felt little the worse the next day. The surprising finding was that, at the end of 36 hours, the right-sided ptosis had disappeared and has not recurred (two months), although, according to the history, it had been present for at least four months. Furthermore, there was now definite, although defective, appreciation of heat and cold in the feet.

The Wassermann reaction in the blood and cerebro-spinal fluid was strongly positive; and vigorous anti-syphilitic treatment has almost restored the patient to health.

Prof. Harrower attributes the improvement in his two cases to "a chemical inflammation superimposed on the chronic condition." Such an explanation might be applicable to the return of sensation in my patient's feet, but it will not explain the sudden disappearance of the ptosis. It would be most valuable if the mechanism could be elucidated.

I am, Sir, yours faithfully,

Park-square West, N.W., Oct. 1st.

A. PINEY.

INFECTION IN SWIMMING BATHS

To the Editor of THE LANCET

SIR,—In your issue of Sept. 28th (p. 740) you refer to my closure of the swimming baths here on account of scarlet fever, and the following details may be of interest:

A violent outbreak of scarlet fever commenced about August 23rd, which was traced to a dairy in the borough, and from there to a certain farm where it was found that one of the milkers had been milking from August 21st—

23rd (inclusive) with a very sore-throat, but no rash. On August 26th this milker's son was definitely notified as scarlet fever, and on swabbing the throats we found hæmolytic streptococcus Type II. in the milker, his son, and his wife. Hæmolytic streptococcus Type II. was also found in the milk, and in all cases of scarlet fever where the milk supply was the suspected source of infection, whilst in several other cases where the milk could be exonerated Type IV. was found. The number of cases notified was about 350, but from inquiries I have made the number of cases affected must have been close on 1500. Most of the non-notified ones had no rash. It therefore became apparent that there was a risk of such cases, on recovery, using the swimming-baths, and it was for this reason that the baths were closed on Sept. 12th.

I may say that the swimming baths have no proper system of filtration or chlorination. I am, of course, familiar with Dr. Alison Glover's work, but have had strong reasons to suspect the Chelmsford baths as giving rise to cases of sore throat in the past, and I felt that to allow bathers to use them in the present circumstances was not advisable.

I am, Sir, yours faithfully,

J. C. SLEIGH,

Sept. 30th.

Medical Officer of Health, Chelmsford.

PANEL AND CONTRACT PRACTICE

Notification of Tuberculosis in London

THE London insurance committee has asked for a report on the number of deaths from tuberculosis in the county during 1930-33, and whether any (and if so how many) of such deaths were either first reported to the county medical officer by the death returns of the local registrar, or were posthumously notified. Should there be any substantial number the medical benefit subcommittee is to suggest measures to secure earlier notification. The mover of the motion drew attention to the fact that of the counties in England and Wales with the highest incidence of deaths from tuberculosis during the four years in question London is seventh, and as the six worst counties are all in Wales London has the unenviable position of the worst county in England. In 10 per cent. of deaths from tuberculosis, he said, the disease was notified posthumously; sufferers, he urged, should be removed from an environment in which they might be a danger to the rest of the community. A medical member of the committee pointed out some of the problems confronting doctors in relation to the notification of tuberculosis; another while supporting the motion thought that pulmonary tuberculosis should be regarded differently from other forms of tuberculosis in regard to possible infection.

In the four years 1930-33 the average death-rate from tuberculosis (all forms) in the administrative counties of England and Wales was 777 per million. The average deaths per million during the same period for the ten worst counties were: Merioneth (1348), Caernarvonshire (1333), Anglesey (1232), Cardiganshire (1078), Pembrokeshire (1043), Brecknockshire (1022), London (971), Glamorganshire (967), Durham (964), and Northumberland (941). London thus keeps company with seven Welsh and two north-eastern counties. But curiously the ten counties with the lowest death-rates are mainly in the south-east of England; they are East Sussex (628), Isle of Ely (627), Hertfordshire (623), Surrey (617), Oxfordshire (613), Buckinghamshire (605), Wiltshire (589), Rutland (583), Derbyshire (555), and Soke of Peterborough (491).

Comparing London with other county boroughs a less unfavourable result is obtained, for all the

following had a death-rate per million of over 1350—viz., South Shields, Middlesbrough, Gateshead, Bootle, Liverpool, and Salford, while closely following them are Tynemouth, Sunderland, Newcastle-upon-Tyne, and Manchester with over 1250. All these boroughs, except perhaps Salford and Manchester, are seaports; three of the ten boroughs with the lowest death-rates are seaside boroughs—viz., Blackpool, Eastbourne, and Southport.

A Novel "Representation"

The London committee, upon the recommendation of its medical benefit subcommittee, decided to make a representation to the Minister of Health that the continuance on the medical list of a practitioner who is 85 years of age, and deaf, would be prejudicial to the efficiency of the medical service of the insured. The local medical and panel committee and the Minister had already concurred in action under Clause 4 (4) of the terms of service, and notice had been given to the insured persons concerned that the doctor was not in a position adequately to discharge his obligations under the terms of service. This is the first occasion, it appears, on which a representation has been made in such circumstances.

Employing Assistants

Clause 11 (3) (n) of the terms of service lays it down that a doctor shall not, except as a matter of temporary arrangement, employ an assistant to attend his insured patients without the previous consent of the insurance committee, which shall not unreasonably withhold its consent, and in no case without previous consultation with the panel committee. Should the two committees disagree the doctor is entitled to appeal to the Minister for a final decision. Two doctors recently applied for the consent of a committee in the Midlands to their employing assistants. The committee took the view in each case that the applicant ought to secure the services of a doctor as a partner and not engage an assistant in view of the number of insured persons for whom they were responsible and having regard to the distance between the residences and the surgeries. The panel committee was consulted and the doctors in due course complied with the committee's requirements.

OBITUARY

**FRANK CHARLES SHRUBSALL, M.D. Camb.,
F.R.C.P. Lond.**

Dr. Shrubsall, a senior medical officer to the London County Council, died at his home in Hampstead on Sept. 25th at the age of 61. His death came as a shock to his friends, for he had just returned from a holiday in Pembrokeshire reporting himself better for the change, and he was at the County Hall two days before his death.

Frank Charles Shrubsall was educated at Merchant Taylors' School and went up with an entrance scholarship to Clare College, Cambridge, where he took a first class in both parts of the Natural Science Tripos. He entered as a medical student at St. Bartholomew's Hospital, gained the Shuter and Brackenbury medical scholarships, and qualified in

1900. In the following year he became a member of the Royal College of Physicians and was elected to the fellowship in 1912, holding in the meantime house appointments at St. Bart's and Brompton. An only son and never robust, his health gave anxiety to his family from childhood and he was sent on several sea voyages. Thus early in life he came in contact with differing types of men, and this



DR. SHRUBSALL

aroused in him that intense interest in the study of mankind which was to shape his career. In 1904 the British Association met at Cambridge and Shrubsall read a paper comparing the physical characters of hospital patients with those of healthy individuals from the same areas and making suggestions on the influence of selection by disease on the constitution of city populations. This paper not only revealed the bent of his mind and his exceptional gifts of observation, but assured him a position among British anthropologists, and he was elected a member of the committee on anthropometric investigation in the British Isles. He also became secretary to the anthropological section of the Association, an arduous post which he held for 18 years. The new developments in elementary schools initiated by the Education (Administration Provisions) Act of 1907 opened up for him a new and attractive field for scientific study, and in 1907 he read a paper at the Leicester meeting of the Association on anthropometry in relation to the school. At this time also he was lecturing on physiology and anatomy to teachers of physical exercises at the Chelsea Polytechnic, gaining the intimate knowledge of the theory and practice of physical training which helped to determine his life work.

In January, 1909, Shrubsall joined the band of brilliant young experts which Dr. James Kerr was forming to cope with the rapidly expanding medical

services in L.C.C. schools. At first, engaged in the general work of the department, he found an outlet for his special knowledge in a mass of physical measurements of school-children already collected. These he collated and analysed, producing comparative figures of the physique of children in central and suburban areas of London. In 1910 he collaborated with Dr. Jane Gilmour, a Glasgow graduate, in an investigation into the aetiology of rheumatism which not only threw light on the distribution and characters of juvenile rheumatism in London, but led to the marriage of the investigators. The growing activities of the service demanding a measure of specialisation, Shrubsall found himself in charge of the L.C.C. special schools for the mentally and physically defective, the blind, the deaf, the partially sighted, and the hard of hearing. His department also included the reformatory schools under the Home Office. Under the Act of 1914 the L.C.C. became the local authority for mental deficiency, and the great volume of medical work falling upon the council in this connexion was naturally placed under Shrubsall's direction. Similarly, as he was associated with the training and after-care of blind children, the medical care of the blind generally which the Blind Persons Act of 1920 placed upon the L.C.C. came under his direction. And when Dr. James Kerr relinquished his service with the council his work connected with the health of teachers and with medical examinations of every kind at the County Hall was transferred to Shrubsall's department. On Sir John Collie's retirement the medical examination of the council's employees also came under his care. The Local Government Act of 1930 not only added enormously to the number of employees in the council's service, but also led to the transference from poor-law administration of large numbers of mentally defective, blind, and other persons.

Thus at the time of his death Shrubsall had charge of an immense volume of public work of the most responsible kind. His association with the development of the public care of mentally deficient persons from its beginning gave him an unique knowledge of this subject. To him the dull and the defective child constituted educationally one problem, and he was fully in sympathy with the findings of the government committee which was responsible for the Wood report, and which recommended the recognition of the two types as one educationally "retarded" group. He was intimately connected with the recent improvement of methods of care of "problem" children involved in the conception "child guidance." The calls upon his time for educational work on these subjects were very great. He was in constant request for evidence and assistance to government inquiries and advisory committees. He was lecturer in mental deficiency at the Maudsley Hospital; he organised the practical work of the courses in mental deficiency carried on in London for many years by the Central Association for Mental Deficiency, the Board of Education, and the University of London. He was required to give informative talks to associations of justices of the peace both in London and the provinces; he also lectured at the London School of Hygiene and Tropical Medicine. The call for information of this kind led to the preparation, with his colleague, Dr. A. C. Williams, of a text-book on "Mental Deficiency Practice." Shrubsall was one of the most widely travelled and deeply read of his medical contemporaries; he had in the course of his life visited nearly every country in the inhabited globe.

For his presidential address to the anthropological section of the British Association in 1924 at Toronto he returned to the subject which first made his mark 20 years before, but expanded it to include all humanity in time and space. It was entitled "Health and Physique throughout the Centuries," and epitomised his reading and thinking, his travels, and his own original researches, and it attracted much attention. In the years immediately following the war there arose a number of cases of delinquency among children of a new and startling nature. Social workers were puzzled. Investigation showed they were associated with attacks, often missed or misunderstood at the time, of encephalitis lethargica. All these cases, of which there were many hundreds, came under Shruballs' own personal notice and enabled him in contributions to medical journals from 1925-27 to exhibit a clear clinical picture of the results of this disease.

One of those who worked with him writes:—

"Hampered as he was throughout his life by recurrent attacks of bronchial asthma, it is amazing that Shruballs was able to do what he did in scientific research and public service. Humanity was his oyster which he opened, not indeed with sword or lancet, but with a penetrating understanding and an all-embracing affection. He was unsparing of self in his devotion to duty and in his numerous acts of kindness. His loyalty to his friends and his generosity knew no bounds. Where it was a question of giving help to a sorely tried colleague or friend the word 'impossible' did not exist for him. A sudden telephone call and a colleague was despatched to act as deputy in delivering a lecture, while he sped with his friend to see an ailing daughter and to restore peace of mind by wise advice and immediate action. His wide knowledge made him the most entertaining of companions. He loved to meet and learn at first hand from those who had done things

in wild and foreign lands. He could take up the thread of conversation on any topic of real human interest and enrich it from his own store. His deep understanding of the springs of human action rendered him the most tolerant of men. Never did he sit in judgment. Where others would recoil in dismay from a case where disaster had been brought about by apparently disgraceful conduct, Shruballs would see only an occasion for sympathy and help. His official duties brought him constantly into contact with anguish caused by illness or misconduct, and to innumerable human hearts he brought a measure of solace and relief in conditions where all comfort had seemed a vain hope. His love of humanity gave him the power of getting 'underneath the skin' of the most recalcitrant and obstinate of patients or delinquents and in the same way enabled him to make friends everywhere he went. It is recalled that during his student days he was working at a Swiss university for a time. On one occasion he was playing tennis with a partner who imperilled the game by poaching. He took her at last firmly by the elbow, led her to her proper position in the court, and indicating a circle with a sweep of his racket he admonished her with the words 'Sie müssen hier bleiben.' When his work was finished and it was time for him to leave, such was the affection and esteem in which he was held that the entire university assembled at the station chanting in unison as he entered the train 'Sie müssen hier bleiben.' A more recent recollection is of a small party of Scottish students on a fleeting visit to London, sitting in the restaurant at which he habitually lunched. They were very reserved and patently suspicious of their southern surroundings. In a moment Shruballs had penetrated their reserve, put them at ease, and for half an hour he held them spellbound with lore of their own native Aberdeen. Himself the happy physician he brought happiness to others."

PUBLIC HEALTH

Paratyphoid Among a Hospital Staff

OF the typhoid group of diseases Prof. M. Greenwood remarks¹ that he knows no other illnesses in respect of which the evidence of man's theoretical and practical capacity to control them is so cogent. Nevertheless, he concludes, danger still lurks in wait and, in this matter of enteric diseases, central and local health authorities can never afford to relax their vigilance. In one of his yearly records of the state of the public health Sir George Newman pointed out that the major causes of enteric infections, such as polluted water-supplies, having been gradually eliminated there remained the more elusive and less easily controlled factors, such as carriers, contact infection, and contaminated foods. A recent outbreak of paratyphoid-B fever among the staff of the Ipswich and East Suffolk Hospital—for the details of which we are indebted to Dr. A. M. N. Pringle, medical officer of health for Ipswich—provides an apt illustration not only of the dangers which may lurk elusive in unexpected quarters but of the vigilance with which they are countered by the sanitary authority.

When the first patient, a member of the nursing staff, sickened on June 16th, the hospital contained

270 patients in the general wards and 30 in the pay-block. Of these 300 patients only 2 of those warding in the pay-block were infected. The personnel of the institution comprised 6 resident medical officers and 156 nurses, together with a domestic staff of 51 plus 24 day-women, and engineers and porters to the number of 19. The doctors provided 2 cases of paratyphoid fever, the nurses 21, the domestic staff 11, the day-women 1, whilst the engineers and porters escaped entirely. With 3 exceptions those affected were promptly removed to the isolation hospital. As Dr. Pringle says, the incubation period of paratyphoid fever is extremely variable, ranging from a few days to more than three weeks; not only so, but owing to the insidious nature of the invasion in many cases, it is difficult to define. He is satisfied, however, that the infective period in the hospital definitely dated between June 10th and 12th. Two cases, notably severe, occurred after an incubation period of 7 or 8 days; in 28 the period ranged between 9 and 14 days, and in 6 between 16 and 21 days. Dr. Pringle believes that the dates of onset point either to one massive infection or more probably to a series of infections extending at most over 3 days.

The food-supply of the hospital was common to patients and staff, and was cooked in the same kitchen by the same staff, the members of which remained unchanged throughout the month of June.

¹ Epidemics and Crowd-Diseases, London, 1935, p. 137.

The fact that no patients in the general wards were infected ruled out extra-mural contamination of the food-supply; absolved the kitchen staff from a causal standpoint; and constituted a tribute to the cleanly methods observed by the nursing staff within the wards. But although the preparation of meals was common to the whole institution, their distribution was effected in different ways by different people. Meals for patients were placed in food containers by the kitchen staff. The containers were taken to the wards by porters, and the meals distributed by nurses. The exempt engineers and porters distributed their own meals and consumed them apart. On the other hand, the food of all other sections of the staff was distributed to the various messes by maids who also set tables, served, and cleared up. These maids played no part in the service of the general wards. As already mentioned, 2 patients in the pay-block were infected, and it is significant that the patients in this block had the same breakfasts and dinners as their nurses; the medical and nursing staff the same meals at night; and the night nurses the same breakfasts and dinners as the day nurses.

These facts pointed to the probability of the infection of food supplied to these sections of the hospital population by dining-room maids. Nearly half this latter group were infected. It appears that the women-cleaners lunched at the same table but some hours earlier than the nurses' dining-room maids who however handled the same crockery, bread, &c., used by the earlier mess. Amongst the cleaners was a Mrs. B. who was employed in the laboratory. This woman went home ill shortly after her lunch at 9.30 A.M. on June 12th. On her return to the laboratory at the end of July her blood-serum agglutinated paratyphoid B very strongly. Dr. Pringle has no doubt that she suffered an attack of paratyphoid fever, although her stools, when it was possible to examine them, proved negative. A fellow worker of Mrs. B. in the laboratory, a boy, was proved to be excreting paratyphoid-B bacilli in his faeces on June 26th and as late as July 9th. Whether he himself suffered a clinical attack was not substantiated, but that as a carrier he infected his mother and brother between June 8th and 11th seems clear. Further, his professional duties included the decanting of acidophilous milk for an out-patient. Unfortunately, somewhere between June 10th and 12th he also decanted the organisms of paratyphoid with the result that the patient fell ill about June 17th. The source of infection of the two laboratory workers was not traced, but since a few cases of paratyphoid were notified in the town at the end of May and the beginning of June it may be hazarded that the receipt of some infected sample at the laboratory of a large general hospital was not impossible.

The moral of this outbreak has no doubt already been drawn by the hospital authorities themselves; it is unwise for laboratory cleaners to handle the food and utensils common to the mess unless they have first washed their hands, and for this, it seems, there were "no adequate arrangements."

No Death from Scarlet Fever

The week ending Sept. 21st, 1935, should not pass without comment for it was the first in the Registrar-General's records to show no death from scarlet fever registered in the great town aggregate or which the weekly reports are compiled. It is instructive to compare the number of deaths recorded

in the great town aggregate for the three September weeks in the four decades of the present century,

Weekly Scarlet Fever Deaths

September	1905	1915	1925	1935
First week	32	17	5	2
Second week	39	14	3	2
Third week	40	18	9	0

and the fall in the totals is the more remarkable when it is remembered that the number of towns comprising the aggregate has increased from 76 in 1905 to 121 in 1935.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 21ST, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2316; diphtheria, 1224; enteric fever, 73; acute pneumonia (primary or influenzal), 436; puerperal fever, 42; puerperal pyrexia, 126; cerebro-spinal fever, 17; acute poliomyelitis, 30; acute polio-encephalitis, 7; encephalitis lethargica, 6; typhus fever, 1 (Port of London), dysentery, 12; ophthalmia neonatorum, 76. No case of cholera or plague was notified during the week.

The number of cases in the infectious hospitals of the London County Council on Sept. 27th was 2679, which included: Scarlet fever, 876; diphtheria, 985; measles, 26; whooping-cough, 349; puerperal fever, 25 mothers (plus 8 babies); encephalitis lethargica, 270; poliomyelitis, 16. At St. Margaret's Hospital there were 14 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox or scarlet fever, 2 (1) from enteric fever, 5 (0) from measles, 16 (4) from whooping-cough, 22 (6) from diphtheria, 61 (9) from diarrhoea and enteritis under two years, and 19 (1) from influenza. The figures in parentheses are those for London itself.

It must be a long time since a week has gone by without the notification of a single death from scarlet fever. Deaths from diarrhoea and enteritis were distributed over 25 great towns, the highest being Liverpool 12, Nottingham 5, Gateshead 4, Hull, Manchester, and West Hartlepool each 3, no other great town more than 2.

The number of stillbirths notified during the week was 268 (corresponding to a rate of 42 per 1000 total births), including 38 in London.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The following all-day courses will take place during October: cardiology, at the National Hospital for Diseases of the Heart (Oct. 7th to 18th); medicine and surgery and the specialities at the Metropolitan Hospital (Oct. 7th to 18th); gynaecology, at the Chelsea Hospital for Women (Oct. 21st to Nov. 2nd); neurology, at the West End Hospital for Nervous Diseases (Oct. 21st to 26th); chest diseases, at Victoria Park Hospital (Oct. 28th to Nov. 2nd). Week-end courses will be held in heart and lung diseases at the Royal Chest Hospital (Oct. 12th and 13th); obstetrics at the City of London Maternity Hospital (Oct. 19th and 20th); physical medicine, at the St. John Clinic and Institute of Physical Medicine (Oct. 26th and 27th). Lectures on endocrinology will be given at the National Temperance Hospital, on Tuesdays and Thursdays at 8.30 P.M., from Oct. 8th to 24th; on modern gynaecology at the Medical Society of London, at 4 P.M. on Thursdays, from Oct. 10th to Nov. 7th; and on anatomy and physiology for the Primary F.R.C.S. at the Infants Hospital on Mondays, Wednesdays, and Fridays, at 8.30 P.M., from Oct. 7th to Nov. 29th. Courses arranged by the fellowship are open only to members. Further particulars may be had from the secretary of the Fellowship, 1, Wimpole-street, London, W.1.

MEDICAL NEWS

HOSPITAL DINNERS

St. Mary's Hospital

Mr. Duncan Fitzwilliams took the chair at the dinner at Claridge's last Saturday and found himself the toast of the evening. Dr. C. M. Wilson pointed out that when the tyro was apt on such occasions to make his subject sound indistinguishable from Lord Lister the expert proposer of toasts was recognisable by his ability to find chinks in the victim's armour. Mr. Fitzwilliams, however, must receive admiration for his courage in one thing at least—that he had been able to give up golf when he found he could not play it. His recreations were stated to be shooting and fishing, but what he really liked was playing at soldiers. We must enjoy this Elizabethan while we could; for already the tom-toms were beating in the bush and Dr. Wilson had a feeling that the streets of Addis Ababa would soon be seeing Fitzwilliams' car. He was a big man, immune from smallness, and his example showed how immeasurably a community gained by the presence of a personality. Replying, Mr. Fitzwilliams described Dr. Wilson as the local Musolini, and said that if he had belonged to the League of Nations he would have offered parts of his colleagues in exchange for himself as chairman. Referring to exhibits in the lobby he reported that the hospital had won the inter-hospital rugby (and A cup), the cricket (and A cup), and many other trophies. It had lost the association football cup by one goal and the hockey cup to the winners; and it possessed in Lovelock probably the finest runner that this country had seen for generations. After speaking of the death of Prof. Collingwood, whose place has been taken by Prof. A. St. G. Huggott, he referred to the resignation of Dr. Wilfred Harris and Sir William Wilcox. Dr. W. D. W. Brooks and Dr. D. H. Brinton had been appointed to the medical staff, and Mr. Fitzwilliams was able to illustrate their qualifications by quoting stories they had told him. He announced also that the staff had been so very prosperous of late that west-end consulting rooms could no longer contain their patients; but fortunately an anonymous donor had been persuaded to provide paying accommodation at the hospital. All this information was generously interlarded with irrelevancies, and the company dispersed in high good humour.

Middlesex Hospital

At the Savoy Hotel on Tuesday last an efficient installation of microphones made every speaker clearly audible to all the 363 diners. Dr. Campbell Thomson expressed his satisfaction at presiding in a year when the Middlesex Hospital celebrated its centenary and completed its rebuilding. In reviewing its new features, he spoke especially of the clinical unit, provided by Mr. S. A. Courtauld, where hospital and school can collaborate in the study of obscure diseases, and the X ray therapy and diagnosis departments, given and endowed by Mr. Meyerstein and Mr. Collins respectively. Mr. Meyerstein, one of the hospital's greatest benefactors, had that evening sent him a telegram offering £3000 to endow a second scholarship for University of London students. The medical school, said Dr. Thomson, had become a fitting partner for the splendid new hospital, and he mentioned that a ward had now been named after Mr. Webb-Johnson, treasurer of the school—a compliment never before paid to a member of the active staff. Mr. Courtauld and Dr. Boldero replied to the chairman's toast of the Hospital and School. Dr. Boldero, as dean, said that students of to-day behaved a great deal better than their predecessors: only two chairs had so far been broken in the new clinical theatre—one by a large visitor from America and one by a member of the Royal Family. They also showed much activity in the more important games: thus, four and often five rugby teams turned out on Saturdays, and the cricket team had not been beaten till the final. Dr. M. Hynes, as Broderip scholar, said that the teaching in preliminary sciences at Middlesex was the envy and admiration of students who came from places where these subjects were considered as

ends in themselves rather than as the foundation of medicine. Mr. E. W. Richey wittily proposed The Guests, and Mr. H. L. Eason, vice-chancellor of London University, replied. For forty years, he said, there had been nothing approaching the developments carried through at the Middlesex Hospital during the last twelve years. He hoped the voluntary hospital system, with its freedom of action and scope for heterodoxy, would never die, but he saw risks in cooperation with such bodies as the London Council. ("I'm all in favour of cooperation," said the elephant, as it sat down on the pleasant's eggs with the laudable intention of keeping them warm.) What was really essential, however, was to keep the freedom and individuality of the teaching schools, and the public should learn that the teaching hospitals were those which must at all costs be supported.

In proposing the chairman's health, Mr. Webb-Johnson was in most amusing vein; but his tribute to Dr. Campbell Thomson was none the less impressive. No dean, he said, had ever entered so closely into the students' activities, and his service to the school before and during the late war was made possible only by surrender of all personal ambition in favour of the Middlesex Hospital and its greater good.

Westminster Hospital

Old students of Westminster Hospital medical school turned up in large numbers to their annual dinner on Sept. 28th, stimulated no doubt by interest in the plans for rebuilding hospital and school. Dr. Vivian Orr presided at the dinner, which was held at the Trocadero restaurant. Mr. E. Rock Carling, who proposed the toast of Hospital and Medical School, said they were at a critical period, with the centenary just over and the rebuilding ahead. Of the two classes of his hearers one would be glad to know that at the new hospital there would be a gymnasium and two squash courts; the other that the pathological department was to be adequate. He was glad to assure both that they were within reasonable sight of obtaining the money necessary for the new buildings. Dr. Arthur Davies, in responding, remarked that Westminster students always remained students, and that "Broadway," the hospital magazine, was an important link between old and new. Mr. J. O. Collin, secretary of the Students Clubs Union, responded on behalf of the school. Dr. Adolphe Abrahams, dean of the medical school, then proposed The Guests, with what he described as the correct proportion of eulogy and malice, although in regard to one guest he was fain to admit that he was really as nice as he looked. Sir James Hartigan, director-general, A.M.S., acknowledging the toast, said that the R.A.M.C. College would welcome the Westminster as near neighbour. He spoke of the need for strengthening the medical branches of the defence forces and of the confidence with which he would look to the Westminster school for support. Mr. W. R. Halliday, LL.D., principal of King's College, who also replied, gave an entertaining account of his practice as an unqualified doctor on an Aegean island during the late war, and went on to express anxiety at the overcrowding of the medical curriculum with specialties. The reports of sundry committees did not, he felt, go far enough in simplifying the curriculum. He was old-fashioned enough to believe that one had to learn in the preliminary stage the basic things and go on to other things afterwards if one had the time. Speaking of the relation between King's as a pre-medical and Westminster as a clinical school, he was not discouraged by the lapse of the legal connexion, feeling as he did that voluntary association was better. Finally, he regretted the forthcoming departure of Prof. D. M. Blair whose alma mater had claimed him. Mr. Arthur Evans, senior surgeon, proposed "The Chairman," which led to a graceful exchange of hospital lore.

Mr. Leslie Paton has been elected an honorary member of the Société belge d'Ophthalmologie.

University of London

Three lectures on the history of medicine will be delivered at University College hospital medical school by Prof. Charles Singer on Oct. 8th, 15th, and 22nd, at 5 P.M. The lectures are open to all medical students of the University.

University of Leeds

At recent examinations the following candidates were successful:—

M.D.

J. Fielding, G. D. Gordon, J. M. Holmes, J. Q. Mountain, and S. Silverman.

M.B., CH.B.

Part I.—Lily Black, Marie H. Calverley, C. L. Davidson, M. Glick, R. C. Lawrence, W. Maude, E. Moore, J. P. Senior, I. Smith, and P. H. Wyon.

Part II.—A. J. E. Barlow, E. Brown, T. K. Cooke, S. C. Crystal, C. V. Light, D. G. Liversedge, T. W. Percival, F. A. Shackleton, R. G. Smithson, Helene E. Sykes, and E. Vining.

Part III.—R. G. Smithson (with Second Class Honours), A. J. E. Barlow, E. Brown, T. K. Cooke, S. C. Crystal, C. V. Light, D. G. Liversedge, T. W. Percival, F. A. Shackleton, Helene E. Sykes, and E. Vining.

B.CH.D.

J. Mort, H. D. Whiteley, and T. J. Wood.

L.D.S.

J. E. Barthel, O. F. Brown, J. E. Hitchen, Lilla E. Rider, and Dorothy E. Smithson.

D.P.H.

Kathleen S. Bruce, C. G. Eastwood, E. R. Hargreaves, Lois J. Ogilvie, J. F. Warin, and Lydia A. Wilson.

The William Hey gold medal and the West Riding panel practitioners prize in medicine have been awarded to Edwin Howard Kitching.

University of Bristol

On Tuesday, Oct. 22nd, at 5.15 P.M., Dr. Macdonald Critchley will deliver the Long Fox lecture in the physiological theatre of this University. He will speak on the occurrence of pain.

University of Birmingham

A short post-graduate course will be held in connexion with the opening of the winter session on Oct. 11th and 12th. At 5 P.M. on Oct. 11th Sir Walter Langdon-Brown will present the prizes and give an address to the students in the medical theatre of the University. A reception by the dean and a dinner will be held at the Grand Hotel that evening at 7.45 P.M.

University of Aberdeen

Dr. Ernest Cruickshank, professor of physiology in Dalhousie University, Halifax, Nova Scotia, has been appointed regius professor of physiology in the University in succession to the late Prof. J. J. R. Macleod.

Ernest William Henderson Cruickshank was born in Edinburgh in 1888, and educated at Aberdeen, at Gordon's College, and later at the university whence he graduated M.B. in 1910. After holding the post of house physician at the Royal Infirmary he went to University College, London, with a Carnegie research fellowship, and remained there until 1915 when he served as a temporary captain in the R.A.M.C. with the 9th Scottish Division and 41st Battalion of the Machine Gun Corps. In 1919 he was appointed officer-in-charge of the Prisoners of War Repatriation Commission to the 3rd Bavarian Army Corps Area. In the same year he returned to take the higher degrees of D.Sc. Lond. and M.D. Aberd. His appointment to the post of instructor of physiology at the Washington School of Medicine, St. Louis, took him to America in 1920, and the next four years of physiology at the Peking University. He returned to America for two years travelling fellowship. In 1926 he took the Ph.D. Camb. and became M.R.C.P. Lond. He went to India as professor of physiology and biochemistry at the Prince of Wales Medical College, at Patna, and for a time he was also Sukhr Raj Ray reader in natural science at the University of Patna. In 1928, the year in which he took up his present chair, he published a book entitled the "Value of Scientific Thought in the Advancement of Modern Medicine." Prof. Cruickshank has also written text books on physiology and contributed many articles to the Society of

Infectious Diseases Hospital for North-East Lancashire

At a conference held at Accrington, which was attended by various representatives from neighbouring boroughs, it was decided that the erection of an infectious diseases hospital for North-East Lancashire was desirable. The annual cost of maintenance was estimated at about £8000 and the cost of building at between £600 and £800 per bed. It is proposed that there should be about 20 beds.

Post-Graduate Course at Leeds

A series of weekly lecture-demonstrations will be held at the General Infirmary on Tuesdays at 3.30 P.M. from Oct. 8th to Dec. 17th. Further particulars may be had from the honorary secretary of the post-graduate committee, the General Infirmary, Leeds.

Royal Free Hospital

A short post-graduate course for former students will be held at this hospital on Nov. 29th and 30th and Dec. 1st. Further particulars may be had from the secretary of the London School of Medicine for Women, Hunter-street, W.C.1.

Tuberculosis Clinic for East Ham

Mr. Arthur Greenwood recently opened a new clinic for the treatment of tuberculosis in the grounds of Durban House, Katherine-road, East Ham. The clinic has cost about £6000, and provides up-to-date facilities for treatment. It is erected on a site which it is hoped will become the public health centre of East Ham.

National Radium Commission

The new commission has been elected and consists of the following members: Lord Donoughmore (Chairman), *Sir Cuthbert Wallace, P.R.C.S. (Vice-Chairman), Dr. Thomas Carnwath (appointed by the Minister of Health), Dr. Thomas Ferguson (appointed by the Secretary of State for Scotland), *Dr. Rupert Hallam, Mr. G. W. C. Kaye, D.Sc. (Joint Hon. Secretary, appointed by the Department of Scientific and Industrial Research), Prof. J. C. G. Ledingham, F.R.S. (appointed by the Medical Research Council), *Mr. J. J. M. Shaw, F.R.C.S., *Mr. G. F. Stebbing, F.R.C.S. (Joint Hon. Secretary), *Prof. Beckwith Whitehouse, F.R.C.S., and *Prof. James Young, F.C.O.G. (*Appointed by The National Radium Trust.)

Association of Industrial Medical Officers

As a result of many months' negotiations, this Association came into being at a meeting at the London School of Hygiene on Sept. 27th, when 20 medical practitioners giving whole-time services to industrial firms in London and elsewhere decided to form it as the Association representative of their branch of practice. Their number will be augmented at an early date by the election to membership of many other whole- and part-time practitioners actively employed by industrial firms, all of whom are invited to apply for membership. The Association replaces, and continues the work of, the previous Council of Industrial Medicine which was formed ten years ago in the Federation of Medical and Allied Services. Its members continue also to constitute the advisory medical committee of the Industrial Welfare Society. The new Association will hold its meetings at the London School of Hygiene. There will be three each year in London and one in the provinces, and each meeting will be followed by a dinner in the School and a conference on the following day. The first chairman is Dr. N. Howard Mummery, of J. Lyons and Co., Ltd., and the hon. secretary is Dr. Donald Stewart, of Imperial Chemical Industries, Ltd., Birmingham. The objects of the Association are to provide the means whereby medical practitioners attached to industrial concerns can meet to discuss the many problems they meet with in their work, both in regard to preventive medicine and remedial surgery, and thus enhance their value to the management of their individual firms, promote the knowledge of their specialty, and increase their usefulness to industry as a whole. Although a good deal has already been done in these directions during recent years, it has been obvious that a more intensive study directed to reducing the vast amount of unnecessary industrial incapacity, and absenteeism, is needed. This the new Association has the means and the will to carry out. Already a good start has been made, for the first conference held on Sept. 28th a paper was read by Dr. Leonard Lockhart, of Messrs. Boots, Ltd., on the present position and future of industrial medicine, when a lively debate followed and particular attention was given to the relations of the members to private and panel practitioners and to hospitals and clinics in promoting the recovery of sick or injured employees.

Aberdeen New Maternity Hospital

The King has sent a donation of £30 to the building fund of the new maternity hospital at Aberdeen. The money was part of the proceeds for admission to Balmoral Castle grounds during the summer.

Cumberland Infirmary

The committee of management of this hospital have presented to the governors a scheme for the extension of the institution which allows for the erection of two new surgical wards, a new children's ward, a skeleton fourth ward, and a new operating theatre. Each of the new wards will accommodate 20 beds. A sum of £22,240 has been subscribed or promised for the extensions.

Grocers' Company Scholarships

An election for three of the scholarships which the Grocers' Company offers with the object of encouraging original medical research will take place in May, 1936. Each scholarship is worth £300 per annum, and an allowance is given for apparatus and other expenses in connexion with the work. The scholarships are tenable for one year but are renewable for a second or third year. Applications must be sent before the end of April to the clerk, Grocers' Hall, London, E.C.2.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES**ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.**

TUESDAY, Oct. 8th.

Therapeutics and Pharmacology. 5 P.M. Dr. Dorothy C. Hare: Therapeutic Observations on Non-specific Colitis. (Pre-identical address.)

Psychiatry. 8.30 P.M.

Dr. H. J. Norman: Psychiatric Digressions. (Pre-identical address.)

FRIDAY.

Clinical. 5.30 P.M. (Cases at 4.30 P.M.) Cases: Mr. W. R. R. Monteith: 1. Bony Tumour of the Pelvis. Dr. F. Parkes Weber and Dr. A. Schlüter: 2. Local Fat-hyperplasia from repeated insulin injections. 3. Riedel's Lobe and Hepatoptosis. 4. Sequel to Removal of a Lymph-gland. 5. Spondylosis in a Young Man. Dr. Gerald illustrating Aurotherapy. Dr. C. anatoporphyrinuria and Hydroa Aestivale. Dr. Terence East: 11. Heart-block with Mitral Stenosis.

Ophthalmology. 8.30 P.M. (Cases at 8 P.M.) Mr. Cole Marshall: The Bipolar Electrolytic Treatment of Detachment of the Retina. Wing Commander P. C. Livingston: Modern Life and Binocular Vision.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, Oct. 8th.—9 P.M. (Great Western Royal Hotel, W.). Dr. A. K. Gibson: Organisation of Medical Practice.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.

THURSDAY, Oct. 10th.—8.45 P.M. (11, Chandos-street, W.). Dr. C. M. Bevan-Brown: Psychological Schools, a plea for correlation.

BIOCHEMICAL SOCIETY.

THURSDAY, Oct. 10th.—2.30 P.M. (Biochemical Laboratory, Cambridge). Short Communications.

SOCIETY FOR THE STUDY OF INEBRIETY.

TUESDAY, Oct. 8th.—1 P.M. (11, Chandos-street, W.). Dr. Gerald Slet: Medical-legal Aspects of Drunkenness.

LONDON JEWISH HOSPITAL MEDICAL SOCIETY.

THURSDAY, Oct. 10th.—3.30 P.M. Sir Walter Langdon-Brown: Modern Aspects of Endocrinology.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.**ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.**

THURSDAY, Oct. 10th.—5.30 P.M. Dr. W. B. Coley: Treatment of Inoperable Malignant Tumours with the Toxin of *Proteus* and *Bacillus prodigiosus*, based on a study of developments from 1892 to 1934.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 7th. to SATURDAY, Oct. 13th.—NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westminster. Dr. A. A. Bailey course in cardiology. METROPOLITAN HOSPITAL, Kensington Road, E. All day course in medicine, starting at 10 o'clock. NATIONAL TUBERCULOSIS HOSPITAL, Harpenden Road, N.W. Tuesday, Oct. 8th. Dr. Leys: Surgery of Primary

and testis. THURS., 8.30 P.M., Dr. Donald Hunter: Parathyroid.—MEDICAL SOCIETY OF LONDON, Chandos-street, W. THURS., 4 P.M., Dr. V. B. Green-Armistage: Practical non-operative gynaecology.—ROYAL CHEST HOSPITAL, City-road, E.C. Week-end course in diseases of the heart and lungs.—Open only to members of the fellowship.

UNIVERSITY COLLEGE HOSPITAL, W.C.

THURSDAY, Oct. 10th.—10 A.M., Dr. W. N. Goldsmith: Acneiform Eruptions. 11 A.M., Mr. C. W. Flemming: Osteo-arthritis of the Hip-joint. 11.30 A.M., Miss Freda Kelly: Minnitt's Machine for Gas-air Analgesia in Labour. Noon, Prof. F. J. Browne: Placenta Previa. 2 P.M., Sir Thomas Lewis: Symptoms of Gross Arterial Disease of the Limbs. 2 P.M., Dr. W. J. Pearson: Pulmonary Tuberculosis in Infants. 3 P.M., Dr. R. W. A. Salmond: The Diagnosis of Gastric, Duodenal and Appendix Lesions by X Rays. 4 P.M., Dr. F. M. R. Walshe: Poliomyelitis.

FRIDAY.—10 A.M., Dr. H. P. Himsforth: The Significance of Glycosuria. 11 A.M., Mr. Gwynne Williams: The Surgical Treatment of Arterial Disease in the Limbs. Noon, Dr. Kenneth Harris: Heart Attacks. 2 P.M., Mr. A. J. Gardham: Follow-up Cases Treated by Radium. 2 P.M., Dr. H. N. Webber: Closed Circuit Method of giving Gas and Oxygen. 2 P.M., Dr. E. A. Blake Pritchard and Dr. L. P. E. Laurent: Cases of Myasthenia Gravis under Treatment with Prostigmin 3 P.M., Dr. D'Arcy Hart: Lipiodol Injection for the Diagnosis of Bronchiectasis. 3 P.M., Mr. Julian Taylor: Obstruction of the Common Bile-duct. (Open only to former students of the hospital.)

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Oct. 10th.—2 P.M., Dr. Brain: Principles of Treatment of Skin Diseases in Children. 3 P.M., Dr. Payne: Diabetes in Children (Part I.).

Out-patient clinics daily at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

KING'S COLLEGE HOSPITAL, Denmark-hill, S.E.

THURSDAY, Oct. 10th.—9 P.M., Dr. Wilfrid Sheldon: Tuberculosis in Children.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Oct. 11th.—4 P.M., Mr. A. Brown Kelly: Oesophagus in Young Children: some anatomical and clinical observations (annual address).

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Oct. 7th.—3.30 P.M., Dr. Kinnier Wilson: Aphasia Apraxia.

TUESDAY, 3.30 P.M., Dr. Purdon Martin: The Cranial Nerves (I.).

WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. Riddoch: The Sensory System (I.).

FRIDAY.—3.30 P.M., Dr. Bernard Hart: The Psychoneuroses (I.).

Out-patient clinic daily at 2 P.M.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.

TUESDAY, Oct. 8th.—5 P.M., Dr. M. Sydner Thomson: Animal Diseases Communicable to Man.

WEDNESDAY.—5 P.M., Dr. I. Muende: Introduction to Histopathology of the Skin.

Thursday.—5 P.M., Dr. J. M. H. MacLeod: Ringworm Infections.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Oct. 7th.—10.30 A.M., Medical Wards, Skin Clinic. 11 A.M., Surgical Wards. 2 P.M., Gynaecological and Surgical Wards, Eye and Gynaecological Clinics.

TUESDAY.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Throat Clinic.

WEDNESDAY.—10.30 A.M., Children's Wards and Clinic. Medical Wards. 2 P.M., Eye Clinic, Gynaecological Operations. 4.15 P.M., Mr. Harvey Jackson: Surgical Methods in Localization of Brain Tumours.

THURSDAY.—10 A.M., Neurological and Gynaecological Clinics. Noon, Fracture Clinic. 2 P.M., Eye and Genito-urinary Clinics.

FRIDAY.—10 A.M., Skin and Dental Clinics. Noon, Lecture on Treatment. 2 P.M., Throat Clinic. 4.15 P.M., Dr. Kon-tam: Cardiac Pain.

SATURDAY.—10 A.M., Children's and Surgical Clinics. Medical Wards.

The lectures at 4.15 P.M. are open to all Medical Practitioners without fee. Operations and medical and surgical clinics daily at 2 P.M.

UNIVERSITY OF LONDON.

TUESDAY, Oct. 8th.—5 P.M. (University College Hospital Medical School), Prof. Charles Singer: Some Medical Books of Historical and Artistic Interest.

PUBLIC DISPENSARY AND HOSPITAL, Leeds.

WEDNESDAY, Oct. 23rd.—4 P.M., Mr. L. N. Pymh: Septic Infections of the Hand.

GENERAL INFIRMARY, Leeds.

TUESDAY, Oct. 8th.—3.30 P.M., Dr. Watson: Cases exhibiting variation in blood pressure.

ROYAL INFIRMARY, Manchester.

TUESDAY, Oct. 8th.—4.15 P.M., Dr. D. Dougal: Dysfunctional Uterine Haemorrhage.

FRIDAY.—4.15 P.M., Dr. F. E. Tyboste: Demonstration of Medical Cases.

Appointments

ALLAN, S. M., M.D. Glasg., D.P.M., has been appointed First Senior Assistant Medical Officer at the Mental Hospital, Whittingham.

BONNELL, H. E., B.Sc. Wales, M.R.C.S. Eng., part-time Pathologist to the East Ham Memorial Hospital.

FLEMING, J. A. C., M.B., F.R.C.S. Edin., D.R., Assistant Radiologist to the Cancer Hospital (Free), London.

FLOOD, P. A., M.R.C.S. Eng., D.M.R., Assistant Radiologist to the Cancer Hospital (Free), London.

GILMOUR, MARY D., M.B. Glasg., Pathologist at the Marie Curie Hospital, London.

TURNER, M.D. Lond., D.P.H., Senior Medical Officer (Education) for Leicester.

Certifying Surgeon under the Factory and Workshop Acts: Dr. B. J. SIM (Wigston District, Leicester).

Vacancies

For further information refer to the advertisement columns

Ashdon-under-Lyne, District Infirmary.—Two H.S.'s. At rate of £150.

Aylesbury, Royal Buckinghamshire Hospital.—Second Res. M.O. At rate of £150.

Beckenham, Bethlem Hospital, Monk's Orchard.—Res. H.P. At rate of £150.

Belgrave, Hospital for Children, Clapham-road, S.W.—Two H.P.'s. and H.S. Each at rate of £100. Also Hon. Radiologist.

Birmingham General Hospital.—Med. Reg. and Res. M.O. £155.

Blackburn, Queen's Park Hospital and Institution.—Res. Jun. Asst. M.O. £150-£200.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £120.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Buxton Clinic for Rheumatism and Allied Diseases.—H.P. At rate of £150.

Cambridge, Addenbrooke's Hospital.—H.P. At rate of £130.

Cambridgeshire C.C.—Asst. County M.O. £600.

Cancer Hospital, Fulham-road, S.W.—Surgical Registrar.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Third Res. H.S. At rate of £75.

Central Middlesex County Hospital.—Med. Supt. £1300.

Chailly, Commu.—E.—Cas. O. At rate of £100.

Douglas, Infirmary.—Second H.S. £150.

East Ham County Borough.—Asst. M.O.H. £500.

Exeter, Royal Devon and Exeter Hospital.—H.S. At rate of £150.

Folkestone, Royal Victoria Hospital.—Hon. Asst. Ophth. Surgeon.

Goldie Leigh Hospital, Abbey Wood, S.E.—Consulting Physician. £150.

Great Yarmouth General Hospital.—H.S. £140.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.

Hove General Hospital.—Res. M.O. At rate of £150.

Infants Hospital, Westminster.—H.P. At rate of £75. At hospital.—Res. Surg. Officer. £400.

Ipswich, Mental Hospital.—H.P. At rate of £150.

Ipsworth, West Middlesex County Hospital.—Asst. M.O.'s. Each £400.

Jersey General Hospital and Poor Law Infirmary.—Asst. Res. M.O. At rate of £150.

Kidderminster and District General Hospital.—H.S. £150.

Kingston-upon-Hull City and County.—Asst. M.O.H. £300.

Lambeth Hospital, Brook-street, S.E.—Pathologist. £1100-£50-£1300.

Lancaster, County Mental Hospital.—Temp. Asst. M.O. 7 guineas per week.

Leeds City.—Asst. Clin. Tuberc. O. £500.

Leeds, Asst. M.O.'s. Each £500.

Asst. M.O.'s. £250.

Hospital.—Res. H.P. At rate of £150.

London Hospital Medical College, E.—Hutchinson Triennial Prize, 1938.

London Lock Hospital, 253, Harrow-road, W.—Surg. Reg. £100.

Infirmary.—Sen. H.S. £180.

Hospital and Institution.—Jun. Asst. £200.

Manchester, Mosaic Hospital for Infectious Diseases.—Jun. Res. Asst. M.O. At rate of £250.

Manchester Royal Children's Hospital, Pendlebury.—Res. Surg. O. At rate of £125.

National Temperance Hospital, Hampstead-road, N.W.—H.P. At rate of £100.

Newport, Mon., Royal Gwent Hospital.—Jun. Res. M.O. At rate of £135.

Northampton General Hospital.—H.S. to Ear, Nose, and Throat Dept. At rate of £150.

North-Western Hospital, Laven-road, Hampstead, N.W.—Pathologist. £1100-£50-£1300.

Norwich, Norfolk and Norwich Hospital.—H.S. to Spec. Depts. Also Cas. O. Each at rate of £120.

Nottingham General Hospital.—H.S. for Ear, Nose, and Throat Dept. At rate of £150.

Plymouth Mental Hospital, Blackdon, Ivybridge.—Asst. M.O. £350.

Plymouth, Prince of Wales's Hospital, Greenbank-road.—Res. Anaesthetist and H.S. to Spec. Depts. At rate of £120.

Road, E.—Asst. Physician. At rate of £100.

—H.P. At rate of £175.

Res. M.O. £250.

Great Portland-st., W.—

Two Registrars. Each £105.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.

St. Bartholomew's Hospital, E.C.—Asst. Neurologist.

St. John's Hospital, Lewisham, S.E.—Res. H.P., Res. H.S. Also Res. Cas. O. Each at rate of £100.

St. Margaret's Hospital, Leighton-road, Kentish Town, N.W.—Visiting M.O. £200.

Salisbury, General Infirmary.—Res. M.O. £250.

Salop County Council.—Asst. M.O. £500.

Shrewsbury Royal Salop.—Surg. O. £250.

Also Res. H.S. and e of £160.

Southend-on-Sea General Physician and Surgeon.

South London Hospital for Women, Clapham Common, S.W.—Asst. Radiologist. £200. Also Med. Reg. £50.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.P. At rate of £150.

Stoke-on-Trent, Stanfield Sanatorium.—Res. M.O. £250.

Sunderland Children's Hospital.—H.P. £120.

Surrey County Council.—Jun. Asst. M.O. for County Sanatorium. At rate of £250.

Sutton, Surrey, Downs Hospital for Children.—Asst. M.O. £250.

Swanley, Home, Parkwood.—Res. M.O. £200.

Tilbury, Victoria.—Sen. as. Sorting O. At rate of £200.

West End, Diseases, 73, Welbeck-street, W.—Hon. Chm. Psychologist.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. and Jun. Res. H.S.'s. At rate of £150 and £100 respectively.

Westminster Hospital Annex, 66, Fitzjohn's-avenue, Hampstead. Res. M.O. £200.

Weston-super-Mare, P. £150.

Willesden General N.W.—Physio-n. e of £100.

Yose, and Throat

York Dispensary.—Res. M.O. £175.

Yorkshire Children's Orthopaedic Hospital, Kirbymoorside.—H.S. At rate of £150.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Rhondda (Treorchy) (Glamorgau), Abercider (Banff), and Leiston (Suffolk).

Births, Marriages, and Deaths

BIRTHS

BOGGM.—On Sept. 26th, at Welbeck-street, the wife of R. H. Boggm, M.S. Lond., of a son.

CRAWFORD.—On Sept. 17th, at Southsea, the wife of Surg. Lt.-Comdr. T. G. B. Crawford, R.N., of a daughter.

DARMADY.—On Sept. 28th, at Devonshire-place, W.1, the wife of E. M. Darmady, M.R.C.S. Eng., of a daughter.

EVANS.—On Sept. 24th, at Devonshire-place, W.1, the wife of Horace Evans, M.D. Lond., of a daughter.

GREEN.—On Sept. 20th, at Sevenoaks, the wife of Ralph Green, M.R.C.S. Eng., of Borough Green, Kent, of a son.

HARRIS.—On Sept. 22nd, at Chelmsford, the wife of H. A. H. Harris, F.R.C.S. Edin., of a daughter.

LEHMANN.—On Sept. 24th, at Wickham Market, Suffolk, the wife of Harold Paul Lehmann, M.R.C.S. Eng., of a son.

LLOYD.—On Sept. 23rd, at Aldeburgh, the wife of W. Jeaffreson Lloyd, M.B. Camb., of a daughter.

MORRISON.—On Sept. 21st, at Llanelli, the wife of W. J. Morrison, M.B. Belf., of a son.

MARRIAGES

HARGREAVES—PURSER.—On Sept. 26th, quietly, at Hubberholme Church, Yorkshire, Edward Rhodes Hargreaves, M.B. Camb., D.P.H., to Hilda Nancy, only daughter of Colonel L. M. Purser, D.S.O., M.B.

DEATHS

ALLEN.—On Sept. 24th, at Baling, William Hamilton Allen, M.D. Dub., late of Stanmore, Middlesex, suddenly, at Harrogate, Surgeon-General Joseph Chambers, K.C.B., C.M.G., 70 years.

Wellington Villa, 1455, Ashton Old, L.R.C.P. Ed., & L.N., L.R.C.S. Ed.

L.R.F.P.S. Glas., 1887, Mem. B.M.A., late Res. Med. Off. Chorlton Union Hosps., Hon. Surgeon Chorlton-upon-Medlock Disp., son of the late Dr. and Mrs. Edwin Jones, of Rhyll.

LEE BORTON.—On Sept. 24th, R. Lee Bolton, L.R.C.P. Edin., of Feteham, Leatherhead, late of Leeds.

PEDLEY.—On Sept. 21st, at Peacehaven, Sussex, Samuel Edward Pedley, M.R.C.S., L.D.S. Eng., of Welbeck-street, W., in his 73rd year.

PHILLIPS.—On Sept. 21st, at Llandilo, David Phillips, M.R.C.S. Eng.

SHRUBSALL.—On Sept. 25th, suddenly, at Hampstead, Frank Charles Shruballs, M.D. Camb., F.R.C.P. Lond.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

ADDRESSES AND ORIGINAL ARTICLES

THE ATTITUDE OF SURGERY TO
HÆMATEMESIS *

By G. GORDON-TAYLOR, O.B.E., M.A. Aberd.,
F.R.C.S. Eng., F.R.A.C.S. (Hon.)
SURGEON TO THE MIDDLESEX HOSPITAL

No clinical mishap is more dramatic and none is more productive of alarm to the patient and of consternation to the onlooker than is the vomiting of blood: nor perhaps has any clinical phenomenon a pathogeny so multifarious. The hæmatemesis due to peptic ulcer is that with which surgery is most frequently, though not exclusively, concerned, and from the effects of which timely operative interference alone can on occasion effect a rescue.

By way of a caveat it should be remembered that this address in no way purports to be a polemic against the non-operative treatment of hæmorrhage from a gastric or duodenal ulcer; overt hostility between medicine and surgery belongs to a bygone era; an appeal is merely being made for still closer co-operation between both branches of the profession in the treatment of these difficult and anxious cases.

Discrepancy of statistics.—Statistics concerning the relative frequency of the various pathological states associated causally with hæmatemesis appear to exhibit much diversity in different countries, and even in the experience of authors in the same realm or State; they can vary widely in different institutions in the same town; there seem also to be divergencies of opinion according as the figures are culled from the records of medical or surgical workers. Thus Pauchet¹ of Paris affirms that 90 per cent. of the cases of profuse hæmatemesis concern gastro-duodenal ulceration and that only 10 per cent. of the hæmorrhages are due to hepatic, splenic, or appendix disease; from the same city, however, emanate the findings of Gutman and Demole,² who, utilising the statistics of the Salpêtrière, found that gastric and duodenal ulcers are the cause of only 19 per cent. of the cases of hæmatemesis investigated.

While Delore³ of Lyons affirms that gastro-duodenal ulcer is responsible for half the cases of hæmatemesis, Finster⁴ of Vienna thinks that out of every 100 grave hæmorrhages from the stomach, in 98 the source is some large artery in the gastric or duodenal wall, and that in only 2 per cent. can the liver or spleen be incriminated.

Urgent Surgery

With the exception of ulcer-hæmorrhages there can scarcely be an occasion when urgent surgery may legitimately be discussed as a means of hæmostasis in gastric bleeding, and the would-be operator should think once again and make assurance doubly sure before deciding to interfere surgically during acute hæmatemesis from the stomach.

Whether surgery "à froid" is the appropriate measure for a particular case of hæmorrhage due to a gastric carcinoma can only be determined after radiological examination, and in most cases the possibility of removal—the sole measure of real value—can be settled only after laparotomy. Recently the employment of continuous slow blood transfusion⁵ in cases of gastric cancer where hæmorrhage dominates the clinical picture has been found

to arrest the bleeding and rapidly to combat the anæmia; and the surgeon has been enabled to explore the abdomen with the briefest delay.

The hæmorrhages of *splenic anæmia* are, unfortunately, not always permanently arrested by the removal of the spleen, and never necessitate urgent surgery; the operation, which may require considerable technical skill, demands also some forethought, perhaps preliminary radiation, and the employment of expert hæmatology, not excepting a minute enumeration of blood-platelets.

In diseases of the *gall-bladder or appendix*, and in cases of *essential thrombocytopenia* associated with bleeding from the stomach, surgery performed at the time of election may indeed play a useful and curative part; in respect of most of the other pathological states associated with hæmatemesis which are laboriously listed in students' manuals of medicine, constituting therein a challenge to the memory of the youthful and anon advertising the meritorious lucubrations of the "crammer," heedless resort to operation bespeaks the ignorant, the commercial, or the experimentalist, and will naturally be dismissed from further consideration by any surgeon of judgment.

Before any decision is taken on the matter of operating for, and in the presence of, a severe hæmatemesis, the greatest caution must be exercised to ensure absolute accuracy in the diagnosis of the causation of the hæmorrhage, for almost the only pathological state which justifies urgent surgery is that of *bleeding from a chronic ulcer*. There should preferably be clinical, radiological, even biochemical evidence of the existence of a chronic ulcer, or if the details of the patient's previous history are not available the anamnesis should leave in the observer's mind no doubt as to the existence of a chronic ulcer of stomach or duodenum, and no uncertainty as to this being the source of the cataclysmic menace to the patient's safety.

I had long taught that the *hæmorrhage of acute ulcer* never required surgery, and that bleeding from this source can be combated, save on the rarest occasions, by medical measures and by the transfusion of blood. Nevertheless, in several cases of this nature that I have encountered recently, non-operative measures, even the continuous blood-drip, did not succeed in arresting the hæmorrhage, and I was constrained to operate on desperately ill patients to save life. The continuous blood-drip,⁶ if it did not succeed in obviating the need for operation, yet proved to be a most valuable aid to surgery, and its employment before, during, and after the operation, contributed enormously to the success that rewarded the surgical intervention.

Apart from the reference to these few acute ulcers and to a unique case of thrombocytopenia with severe hæmatemesis where urgent operation was demanded and proved successful, it is the attitude of surgery to the *bleeding of chronic peptic ulcer* that forms the burden of this communication.

Surgical Prophylaxis of Hæmorrhage

Is surgery to be employed as a prophylactic measure against the hæmorrhage of gastro-duodenal ulceration?

An answer to this question would appear to depend upon (a) the incidence of hæmorrhage in connexion with ulcer, (b) the risk with which ulcer-hæmorrhage is fraught, and (c) the prospective mortality of any surgical measure contemplated.

* Address delivered to the Middlesex Medical Society, October 11, 1935.

(a) *The incidence of hæmorrhage.*—A history of hæmatemesis or of melæna or both was obtained by Hurst⁶ in 18 per cent. of cases of gastric ulcer and in 25 per cent. of the duodenal ulcers examined at New Lodge. The statistics of Lord Moynihan⁷ and of D. Balfour⁷ of the Mayo Clinic are similar; 20 per cent. of gastric ulcers and 25 per cent. of duodenal ulcers have bled.

Crohn and Manheim⁷ of the Mount Sinai Hospital, New York, found evidence of bleeding in nearly 30 per cent. of gastric ulcers, and in nearly 20 per cent. of duodenal ulcers admitted; they insist, however, that the percentage of ulcer cases gaining admission to the hospital is relatively small, and that probably only 10 per cent. of all ulcers bleed.

The cases admitted to New Lodge are necessarily of a more severe type, and Hurst's estimate of the percentage of ulcers that bleed is also about 10 per cent., which agrees with the figures of J. J. Conybeare⁷ computed from the statistics of Guy's Hospital.

(b) *What is the risk to life from ulcer hæmorrhages?*—Conybeare affirms that only 2·5 per cent. of patients with ulcers that bleed die of hæmorrhage; so that the risk of loss of life by bleeding from an ulcer is only about 1-in 400 or thereabouts. Alas! however, Ernest Bulmer⁸ of Birmingham found that in cases of hæmatemesis due to chronic peptic ulcer, treated by non-operative measures, there was a mortality of 11·6 per cent. The mortality of the Middlesex Hospital⁹ cases of hæmorrhage from chronic peptic ulcer treated medically amounted to 21 per cent., and an almost identical percentage was found by A. M. Cooke¹⁰ in 191 cases of gastroduodenal hæmorrhage admitted into St. Thomas's Hospital during seven years; 24·1 per cent. of these patients died.

R. S. Aitken,¹¹ dealing with the London Hospital figures for 1929-33, found an 11 per cent. death-rate; but in the cases classed as "severe" the mortality was no less than 42·8 per cent. F. F. Hellier,¹² dealing with the Leeds cases, records a 14·8 per cent. fatality. These are far higher figures than the comforting 2·5 per cent., and cannot be viewed complacently by those anxious to advance the therapy of ulcer-hæmorrhage. Nevertheless it seems certain that the chances of any patient with an ulcer dying of hæmorrhage cannot be worse than 1 in 40; the risk will vary with the length of the history and the chronicity of the ulcer. The decision in favour of surgery in peptic ulcer is not likely however to be determined on the question of prophylaxis against hæmorrhage. In the case of gastric ulcer, chronicity, the menace of malignancy, severity of pain, incapacity for work, &c., are more likely to be the deciding factors.

I have at this moment a bias in favour of an expectant attitude in the case of duodenal ulcer, regarding as indications for operation only stenosis, perforation, hæmorrhage, a large crater, duration of existence, and an incapacity for work. The only operation which is going to confer a permanent immunity from hæmorrhage is a resection or some type of exclusion, and in the case of a duodenal ulcer it would be difficult to press for an operation of this character purely as a prophylactic measure against bleeding.

(c) *The prospective mortality of an operation to prevent hæmorrhage* from a peptic ulcer will vary with the nature of the procedure envisaged, with the experience, skill, and judgment of the surgeon and with the general condition of the patient. In the most experienced and the most competent hands an operation of resection, or resection with exclusion,

carries nowadays a mortality of only about 3 per cent., but this represents the acme of surgical skill and experience. Yet this figure is greater than the risk run by the possessor of a peptic ulcer of dying of hæmorrhage; an operation undertaken solely on grounds of prophylaxis against bleeding is therefore to be discountenanced.

Previous History of Hæmorrhage

Does a history of hæmorrhage constitute an indication for surgery in chronic peptic ulcers?

The authoritative opinion of D. P. D. Wilkie¹³ favours medical treatment for the first hæmorrhage and in the event of a second bleeding it is recommended to wait for ten days after it has ceased and then to operate; it is admitted however that three patients have died during the second hæmatemesis. The mortality of cases of hæmatemesis from chronic ulcer of the stomach or duodenum treated medically at the Middlesex Hospital from 1924-33⁹ inclusive in which a second large hæmorrhage occurred was no less than 78 per cent., and with each successive bleeding the death-rate mounts higher. This seems to indicate the need of surgery before a second hæmatemesis occurs. Bulmer, too, holds the view that in the event of a hæmatemesis being followed by the presence of occult blood in the stools for some weeks, surgical interference should be utilised without delay; this opinion coincides with the view of Charles Bolton,¹⁴ based upon a wealth of experience which makes it of supreme value.

Probably in the near future interference before a second hæmorrhage may come to be regarded as the optimum time for surgery; on the other hand, it may be found just as difficult to persuade the resurected patient to submit to operation as to induce the physician to realise that second and subsequent hæmorrhages are increasingly fatal. Possibly, however, medicine will have triumphed over the peptic ulcer problem and will cure ulcer of the stomach and duodenum with a sureness and certainty approximating that with which it controls diabetes, pernicious anæmia, or some of the tropical infections; the necessity for decision as to the optimum time for surgery in hæmatemesis may then no longer arise.

Hæmorrhage from Chronic Ulcer

Does active hæmorrhage from a chronic peptic ulcer, whose existence is beyond cavil, require surgical treatment during the bleeding, or is surgery best practised after the bleeding has ceased?

It has been regarded by many, even by "interventionists," as more convenient and less harassing to operate after the first bleeding has ceased. This indeed may be a pious hope! How do we know that it will cease, or when it will cease? Surely the only rational attitude now is one of "armed expectancy."

1. In every case of hæmatemesis or melæna, whatever be the cause, immediate steps should be taken to organise donors from amongst the relatives and friends so that the certainty of a gallon of blood of the same or suitable group can be relied upon, should necessity arise. It is impossible to foretell what may happen in any case of hæmatemesis.

2. In every patient in whom the bleeding is more than slight—i.e., a pulse-rate of 100 or more and a hæmoglobin estimate of less than 80 per cent. in a man or 70 per cent. in a woman—a drip-transfusion should be commenced straightway.

3. It is desirable that every case of hæmatemesis should be transferred to an institution, and if there is a possibility of the case being one of hæmorrhage from a gastric or duodenal ulcer, the necessity for

fact that many were dealt with in institutions remote from personal supervision, and without all the arrangements necessary for adequate and repeated transfusion. A spirit of self-criticism and a disinclination to operate "à chaud" were thereby induced. Nevertheless, the total in groups (a) and (b) amounted to 32 cases, with 6 deaths—a 19 per cent. mortality-rate.

(c) A period of abstention from active surgery in these cases; this attitude coincided with the impetus given to the medicinal or alkaline treatment of ulcer, resulting from the papers of MacLean and the booming of this ancient method of therapy in the lay press. During this period, the mortality of acute hæmatemesis from chronic ulcer in cases which I saw in outlying hospitals and in private practice was enormous; there were no operations for active hæmatemesis at the Middlesex Hospital during this quinquennium. A few cases were, nevertheless, operated upon outside the hospital during this period, and a few successes rewarded surgical enterprise.

(d) Our therapeutic armamentarium for dealing with hæmatemesis has recently been reinforced by the introduction of the "continuous intravenous blood-drip" by Marriott and Kekwick.⁵ As a method of treatment it is fraught with great possibilities no less for the physician than for the surgeon. Experience with this method of giving blood has certainly brought me to operate with advantage upon cases which to their detriment might have been denied surgery; it has also slightly modified my views as to the time to operate on bleeding ulcers of the stomach and duodenum and even the type of hæmorrhage which requires surgery; it has certainly given me an increased, and increasing, confidence of bringing the undertaking to a successful issue.

Hæmatemesis, Perforation, and Complications

There is one group of cases to which a brief reference may be made.

(a) In a somewhat insignificant minority of ulcer-hæmorrhages there may be *concomitant perforation*. The association is fortunately rare, for there is much truth in the dictum of Moses Behrend,¹⁵ "perforated ulcers bleed rarely; bleeding ulcers perforate only very exceptionally." The two complications of a peptic ulcer may occur simultaneously in unmistakable fashion, and perforation will demand urgent operation; on the other hand, the twin nature of the catastrophe may be discovered only during the course of the operation. The association of an active hæmorrhage will naturally call for some modification of the technique habitually employed in dealing with perforation of a peptic ulcer.

I have actively intervened for this syndrome three times in connexion with gastric ulceration, and once for a bleeding and perforated duodenal ulcer; all four cases were dealt with by resection and all recovered. I have, however, dealt unsuccessfully with a perforated jejunal ulcer consequent upon a gastrectomy for duodenal ulcer; the jejunal ulcer was actively bleeding at the same time. In another case, after an exploration, I found it impossible to do anything for a patient with a bleeding gastro-jejunal ulcer, which still further complicated the clinical picture by eroding the transverse colon. In this last-mentioned case, with its ghastly communications, a bloody flux composed of diarrhoea and putrid melæna poured through the pathological anus into the stomach, whence it was rapidly ejected; the victim's sufferings were fortunately ended by death.

(b) Hæmorrhage from a peptic ulcer may *precede* perforation; the fatality of this sequence of complications is prodigious. In these cases the enfeebled condition of the patient from a hæmorrhage may mask the ordinary clinical picture of a perforation which may fail to be diagnosed.

(c) Finally, hæmorrhage may *complicate* the progress of a *successful operation for perforation*. In my own experience the results have been calamitous, whether the bleeding has been attacked by surgical reintervention or treated by medical measures. These hæmorrhages are usually ushered in by an increased pulse-rate and some elevation of temperature; they occur, as a rule, from 7 to 21 days after the initial emergency operation. The hæmorrhage may originate from the sutured ulcer itself, from some other ulcer in the stomach, or it may be a diffuse parenchymatous bleeding from the gastric wall. In two cases of my own, this last-mentioned condition of the gastric mucosa was found, and both these ended fatally.

Is there any prophylactic measure against this most lethal combination of catastrophe? Resection of stomach or duodenum can hardly be urged as a routine measure for perforated ulcer, though Alesandri¹⁶ and certain other continental surgeons speak well of it in early cases. In the hands of skilled and experienced surgeons it may be a sound measure, but an enormously increased mortality from perforated ulcer would result if this operation were regarded as the appropriate form of surgery in every case.

Post-operative hæmatemesis, due to the failure to occlude bleeding vessels in the stomach or intestinal wall, is all but unknown to me, since I rarely, if ever, employ clamps. *Indirect operations for peptic ulcer* of stomach or duodenum may lead to hæmorrhage from the original ulcer which is preferably dealt with by excision or exclusion. A fatal bleeding may take place from such a source, unless surgical reintervention is employed.

Hæmorrhage from anastomotic ulcers.—If these are complicated by severe hæmorrhage, the rules governing the treatment of peptic ulcers of stomach and duodenum should control the surgeon in this class of case. Amidst the anxieties of a complex artificial pathology, if urgent operation should be required or undertaken, the least possible should be done at the time; hæmostasis alone is to be secured.

Conclusion

It may still be long before physician and surgeon see absolutely eye to eye as to the necessity and as to the appropriate moment for operative interference; but I have no doubt whatever that ultimately the internist will become more alive to the menace of disaster which threatens the patient, and will become more surgically minded towards these cases than he may be at the moment. Until the arrival of the day when the department of medicine shall cure all ulcers, this valuable method of resuscitation should give the physician the same confidence in the power of surgery to deal successfully with hæmorrhage of an ulcer as with that of an ectopic gestation.

There is one danger that I foresee from continuous drip-transfusion: its very success in at least temporarily arresting hæmorrhage may lead to vexatious delay and to ill-judged postponement of obvious operation, until a time when the patient is worn out by the hope that is deferred, his tissues poisoned by morphia, his biochemistry altered by the starvation enjoined for the arrest of the bleeding, and his

cough-reflex abolished by hypnosis: by then all is ready for an impending low-grade pneumonia which will carry him off. When surgery is finally demanded as "un dernier ressort," is it little wonder that fatality ensues?

Increasing experience confirms the cherished conviction that the continuous blood-drip, aided by appropriate and timely surgery, is solving the ulcer-hæmorrhage problem and rationalising the treatment of these anxious cases, which have hitherto so frequently dismally disappointed the all-too-sanguine expectations of a futile and complacent inactivity; to this inert policy I was myself for a time idly, hopefully, disastrously partisan. Finsterer's "first forty-eight hours" is still the optimum period for surgical attack in hæmatemesis, and the golden age of gastric surgery will have been attained only when all cases of hæmorrhage from chronic ulcer come to operation within that space of time.

Let there be no procrastination, for delay is fraught with peril; early enterprise is the prelude to success.

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AN OUTBREAK OF SCABIES IN A MENTAL HOSPITAL

By FRANK E. KINGSTON, M.B. Lond., D.P.M.

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The problem of scabies in an institution has certain distinctive features. On the one hand, disinfection of all individual bedding and clothing is readily accomplished; the patients, moreover, are under constant observation and one can readily satisfy oneself that any treatment prescribed is carried out in detail. On the other hand, there is the wide range of dissemination from the undetected scabetic through accidental interchange of clothing and bedding, and the impracticability of treating all such possible contacts—as one can in the small family—as if they were actually infected.

In the mental hospital there are two further difficulties. The patients rarely complain of any discomfort and thus do not come forward for treatment; and, secondly, with a few exceptions, they do not coöperate. Not a few patients are actively hostile and resistive to any sort of attention; and the difficulty of applying any treatment which depends upon the opening-up of all burrows need not be stressed. Below is given briefly an account of an outbreak of scabies in the chronic female block of Wakefield Mental Hospital, comprising 12 wards and containing some 650 patients.

It may be mentioned here that the particular technique of sulphur ointment treatment followed was that recommended by Sequiera¹ of three rubbings with soft soap, three baths with thorough scrubbing,

and three liberal applications of unguentum sulphuris B.P. at intervals of 24 hours. The only detail omitted was the use of gloves and stockings after the application of the ointment. Clothing and bedding were autoclaved.

HISTORY OF THE OUTBREAK

The position at the end of April, 1934 (when I took over the charge of the block), was that of the dozen or so cases of scabies which had appeared in four separate wards since the beginning of the year, all had been energetically treated with sulphur-potash baths and sulphur ointment for periods of a week or more and were regarded as cured.

Early in May a patient was reported to have a rash, and examination showed well-advanced generalised scabies. Microscopical examination of a scraping revealed the sarcoptes. The patient was isolated in bed and the routine sulphur ointment treatment given. The following day the limbs of all the other patients in the ward were systematically examined. Two clinically certain and four doubtful cases were found. All six were isolated and treated. During the next few days all previously suspected or treated cases were thoroughly examined, and wherever a suspicious case was found the limbs of all other patients in the ward were examined without delay. All cases, whether certain scabies or only doubtful, were submitted to the routine treatment.

In this way some 30 cases were netted and isolated. Treatment was repeated at fortnightly intervals in all cases which appeared clinically to be still active and which showed, in addition, the sarcoptes or unhatched eggs in scrapings from the burrows. Isolation in bed was maintained for a week after all suspicious lesions had disappeared.

After about a month had elapsed it became apparent that while nearly all of the "doubtful" cases had cleared up hardly any of the clinically "certain" cases had done so, and not one of the cases in which microscopical evidence of the parasite had been found showed any permanent improvement; nor did stricter supervision of the treatment and the opening-up of all visible burrows with the scalpel give results commensurate with the time and energy expended.

The position in July can be summed up as follows: of ten cases in which the diagnosis had been confirmed microscopically not one had been cured by two courses of treatment. Five had been cured after 3, 3, 3, 4, and 5 courses respectively, while five remained active after 2, 2, 3, 3, and 5 courses respectively.

Treatment was now tried, tentatively at first, using a combination of sulphur and turpentine. The latter was chosen for the reason that it is capable of holding sulphur in solution and that it penetrates the skin.² It had the further recommendation that it is itself used as a parasiticide (for ringworm).² The application finally used (referred to as S.T.P.) was prepared as follows:

Thirty grains of sublimed sulphur were melted in a wide test-tube. To this, small quantities of oil of turpentine B.P. were added, well boiled, cooled by the addition of more turpentine, and decanted. This process was repeated until all the sulphur was dissolved, 6 fluid ounces of turpentine being used, and the volume made up to 8 fluid ounces with liquid paraffin B.P. The resultant preparation of sulphur, turpentine, and paraffin is a clear deep amber fluid with a pungent odour. The percentage of sulphur dissolved in the turpentine is about 1 per cent. If more is dissolved it crystallises out on cooling.

The three-day scheme of treatment, using S.T.P. in place of sulphur ointment, was adhered to, commenc-

ing with a single bath and scrubbing. Later this was found to be unnecessary and no attempt was made to open up burrows beyond that required for diagnostic purposes. In view of the observation made that vesicles will continue to form—apparently as irritative phenomena from fragments of sarcoptes left in the skin—the treatment, whenever possible, was completed with one or more baths and scrubbings to get rid of the dead parasites.

It soon became evident that S.T.P. was a more effective medicament than sulphur ointment, and had the initial netting of infected patients been complete the outbreak would rapidly have ended. As it was, in addition to one or two cases drafted from another block, fresh cases appeared both in the wards previously infected and in others. (This last fact is not surprising in view of the severe overcrowding, and the fact that structural defects of the block necessitate the constant intermingling of one ward with another.) The chief problem was no longer the treatment of the individual but the netting of the cases as yet undetectable. To do this, whenever scabies appeared the "hands and feet" examination of the ward was repeated at fortnightly intervals until two consecutive examinations were negative. Treated patients were re-examined more thoroughly and over a longer period. In this manner, after several phases of premature optimism, the outbreak was gradually quashed, the last four cases appearing in the early months of 1935. Doubtful cases should, of course, have been treated; but in view of the experimental nature of the treatment this was withheld until the disease was confirmed microscopically.

Many of the cases netted by systematic examination were very early ones. On the other hand, cases appearing in a ward not yet "scabies-minded" were often remarkably extensive, and this was particularly so in the wildly excited and resistive cases. Of 23 patients treated, 9 were cured after one course of treatment, 10 were cured after two courses. Of the remaining 4, 3 were cured on the third course and the other was treated and cured with Mitigal after the second failure of S.T.P. One other case was cured with Mitigal after failure with sulphur ointment, the choice of treatment being determined by the presence of a severe eczema of the legs.

Unpleasant results appear to have been confined to the appearance in two of the earlier cases of a crop

It is worth noting that of the total 29 patients, 13 exhibited scabetic lesions of the palm or sole. Of further interest is the fact that only one patient complained of itching, although several admitted this when questioned. One patient, an intelligent but depressed post-encephalitic, complained not of itching but of general ill-health. She was examined and found to have generalised scabies.

Table showing Survival Times of Adult Female Parasites in Different Media

Medium.	Number of experiments.	Viability.
Soft paraffin B.P.	1	44 hours. (46)
Sulphur ointment.. B.P.	4	5 11 18 26½ hours. (18½) (20½) (18) (28)
Mitigal	4	4 6½ 18 18½ hours. (6) (17½) (19) (21)
2 per cent. K ₂ S(fresh)	2	10 12½ min. (13) (15)
2 per cent. K ₂ S(stale)	1	70 min. (Sarcoptes lost.)
S.T.	3	5 5½ 7½ min. (5) (5½) (7½)
S.T.P. (1:1) ..	5	4 5 9 12½ 30 min. (5) (6) (11) (17) (33)
S.T.P. (1:4) ..	3	2½ 20½ 27 hours. (3½) (21½) (29½)

2 per cent. K₂S = 2 per cent. solution of sulphurated potash in water.

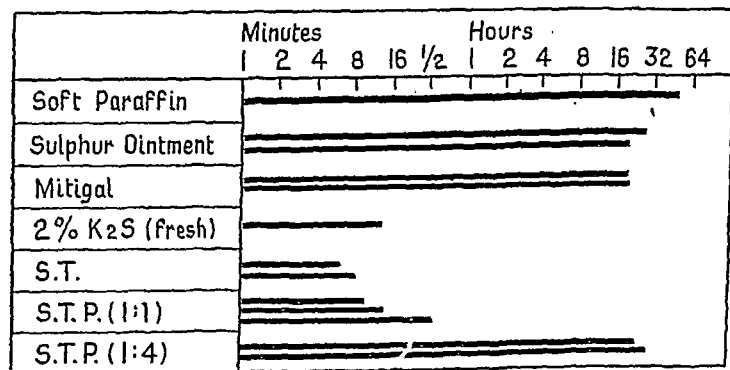
S.T. = 1 per cent. solution of sulphur in oil of turpentine B.P.

S.T.P. (1:1) = equal parts of S.T. and liquid paraffin B.P.
S.T.P. (1:4) = one part of S.T. to four parts liquid paraffin B.P.

EXPERIMENTAL OBSERVATIONS

The examination of the effect of various substances on the isolated living sarcoptes was suggested by the chance finding, in a scraping from a patient already under sulphur ointment treatment, of a vigorously active parasite completely embedded in sulphur ointment when the scraping was examined an hour or so after it had been obtained. From this time on, whenever a favourable case presented itself, examinations were made at the bedside on the living sarcoptes immediately after its capture from the patient. The parasite was at once mounted on a slide in the medium chosen, without any cover-glass, and examined under a low-power microscope. All but those which showed active movement at room temperature or on slight warming were discarded, and except for an occasional careful warming in the prolonged experiments (to supply evidence of continued life) all the experiments were carried out at a constant room temperature of between 60° and 70° F.

Considerable variation in vitality in a given medium was found, depending possibly upon the age of the parasite, but in spite of this a significant difference



Survival times of sarcoptes in various media (logarithmic scale).

of indolent boils. This was attributed to vigorous rubbing, which was subsequently avoided. Wherever possible the patient's urine was tested both before and after treatment, which was not intended for any case with kidney disease; but no such case was discovered, nor did any patient show albuminuria subsequently.

in viability in various media was found. The accompanying Table gives the observed viability of adult female parasites. For each medium the upper row of figures gives the time to the last observed sign of life, while the lower row gives the time to the observation of death. Any muscular movement, whether of

limb, jaw, or internal muscles, was regarded as a sign of life. Where observation was continuous the last observed movement was taken as the time of death.

If the survival times of the most viable examples in each medium are represented (roughly) on a logarithmic scale, giving the times between 1 minute and 64 hours, the results shown in the Figure are obtained.

No comparative experiments on the viability of the eggs were carried out. The following observations, however, are worth recording.

Eight eggs were captured and embedded in a film of sulphur ointment. They were left for four days at a temperature of about 60° F., at the end of which time four of the eggs were found to have hatched out, the larvæ having escaped.

Two eggs showing little differentiation of their contents were embedded in sulphur ointment. Each day they were put in an incubator at 100° F. for five minutes. One egg showed no further change. The other, on the fourth day, showed the distinct outline of the developing embryo. On the fifth day development appeared complete and slight warming resulted in repeated movements of the jaw. Hatching did not occur and on the following day there were no signs of life.

COMMENTARY

The object of this paper is to stress the inadequacy of sulphur ointment in the treatment of scabies rather than to advocate a new treatment which is far from ideal. It is not suggested that the experimental results with isolated parasites are strictly parallel with the activity of the medicaments concerned when applied to the skin; and in this connexion it should be mentioned that mitigal, which figures badly in the experiments, has been in the few cases in which I have tried it and in the experience of my colleagues an efficient preparation in the curing of scabies. In view, however, of the dogmatic optimism to be found in text-books of dermatology with regard to the treatment of scabies by sulphur ointment, the following of the recorded observations may well be emphasised:

Out of ten certain cases of scabies in mental patients not one was cured by two courses of sulphur ointment treatment.

A total of 33 courses of treatment resulted in five cures and five failures.

At room temperature an adult female sarcoptes will survive complete embedding in sulphur ointment for 24 hours.

At room temperature the eggs will survive and continue to develop for four days in sulphur ointment, and it does not prevent the larvæ hatching out. On the other hand, sulphur ointment is more lethal for the sarcoptes than Vaseline, killing the parasite in half the time.

Two per cent. sulphurated potash in water is markedly toxic for the parasite, but loses its potency if allowed to become neutralised by the carbon dioxide of the atmosphere. This fact prevented any satisfactory experiment with the reagent at the strength of the sulphurated potash bath as usually prescribed (i.e., about 1 in 1500).

Clinically S.T.P. (sulphur, turpentine, and paraffin) has been disappointing. Apparently potent when applied directly to the parasite at a concentration which caused little or no irritation to the skin, it frequently failed to cure the patient even when given as quite liberal applications on three successive days. On the other hand, for a certain type of patient it is undoubtedly superior to sulphur ointment. The treatment may be repeated the following week without ill-effect, and this course is probably advisable in any well-established case. The preparation is simple and cheap, and the opening-up of burrows, although

doubtless of benefit, is not an essential factor in the treatment.

I wish to thank the medical superintendent, Dr. C. J. Thomas, for his permission to publish these results, and my colleagues for their interest and help. I should also like to compliment the nursing staff on its cooperation in somewhat trying circumstances.

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ANÆSTHESIA BY CLOSED METHOD

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DISREPUTE has been brought upon the closed method of anæsthesia by excessive emphasis on its economy. It is certainly economical, but its importance lies in the exact and rational use that can be made of that hormone of the respiratory system, carbon dioxide.

USE OF THE SODA-LIME CANISTER

Failure to realise that economy is not the whole story has led to the adaptation of a soda-lime canister, often of faulty design, to a machine which has been designed for open anæsthesia. The result of this can only be a makeshift, often physiologically incorrect and therefore unsatisfactory. Closed anæsthesia is, as a result, condemned, although the real fault lies in an incorrect physiological design which renders a sound principle ineffective.

In order to apply the chemical principle of the absorption of carbon dioxide by soda-lime, a closed system of respiration is essential, and in such a system two factors must be fulfilled: (1) the carbon dioxide of each expiration must be completely absorbed; (2) the volume of oxygen used at each inspiration must be replaced by the introduction of a corresponding volume of oxygen.

One may employ a single-phase or a two-phase circuit of breathing. In the single-phase circuit, which is in effect an ebb-and-flow arrangement, the soda-lime canister is set between the mask and the bag. Breathing is from mask to bag and from bag to mask. One breathing tube is used and the direction of the air stream changes with inspiration and expiration. Both the inspired and the expired air are subjected to the resistance and chemical action of the soda-lime. In the two-phase circuit the expiratory and inspiratory phases run in the same direction. An expiratory and inspiratory one-way valve directs expiration from the mask through the soda-lime to the bag, whereas the inspiratory phase runs direct from the bag to the mask. Either circuit can be designed according to correct physiological principles, but the two-phase circuit makes it easier to combine correct physiological with convenient mechanical principles, and a more flexible unit is possible.

Volatile anæsthetic agents are excreted by the lungs almost completely, and in exactly the same form as that in which they were absorbed. In a closed system, therefore, the same amount of anæsthetic may be cleansed and used again and again. In designing such a system five factors are of importance: (1) the system must be airtight; (2) resistance to breathing must be reduced to the smallest possible proportions; (3) the absorptive properties of the soda-lime must always be active; (4) artificial dead

space must be reduced to the smallest possible volume; (5) the oxygen supply must be fed into the system in such a manner as to be easily adjusted and readily available.

Airtightness.—If an endotracheal tube is used with adequate packing no difficulty is experienced in rendering the system airtight. A mask accurately adjusted and held in position with Clauson's harness will almost invariably make an airtight joint. A method of neutralising a slight leak between the mask and the face will be mentioned later.

Resistance to breathing.—There are three possible sources of resistance: (1) The weight and resistance of the expiratory and inspiratory valves, which can readily be reduced to a minimum. (2) The design of the canister and the size of the soda-lime granules employed; the smaller the granules the greater will be their absorptive powers but the greater will also be their resistance to breathing. Since the size of the canister is of little moment one can afford to increase the size of the granules to that mesh which provides efficient absorption and at the same time gives least resistance to breathing; using my form of divided canister, that known as 6-10 mesh, is most satisfactory. (3) The ether reservoir; if this is designed on the carburettor-wick principle resistance is very slight and is of little importance, because it is in circuit for such short periods of time. The total resistance to breathing in the machine I use is 2 mm. of Hg.

Absorptive properties of the soda-lime.—If the anaesthetist uses Siebe Gorman's Green Protosorb in a glass canister he can determine the integrity of the charge of soda-lime at any period, since it changes in colour from green to grey-brown when its absorptive properties have become depleted. In a two-phase circuit the flow through the canister is in one direction only, and he can therefore follow colorimetrically the gradual depletion of the canister contents from entrance to exit as the anaesthetic proceeds. If the divided canister is used as soon as the soda-lime becomes depleted the canister can be by-passed, recharged, and replaced. The use of coloured soda-lime and the possibility of recharging the canister during the anaesthetic makes the chance of inefficient absorption very remote.

Dead space.—On the question of dead space hangs the flexibility and physiological integrity of this method of anaesthesia. The normal volume of tidal air is 500 c.cm. and the normal volume of respiratory dead space is 140 c.cm. The difference between these two values—i.e., that volume of the inspiratory air which actually reaches the lung alveoli and can take part in respiratory exchange—is 360 c.cm. This will be referred to as "efficient lung ventilation."

Tidal air.	} Minus {	Dead space.	} Equals {	Efficient lung
500 c.cm.		140 c.cm.		ventilation.

The volume of efficient lung ventilation can be reduced in two ways: (1) by reducing the volume of tidal air; (2) by an artificial increase in the volume of dead space. The factors which reduce the volume of tidal air and the methods of correcting them are common to both the open and the closed methods of anaesthesia. The problem of artificial increase of dead space applies particularly to closed anaesthesia. It is easy to visualise an increase of artificial dead space which would reduce the volume of efficient lung ventilation to zero. In such an event the protective respiratory reflex would effect a compensation to the extent of 1500 c.cm., the volume of complementary and supplemental air; but if the volume of artificial dead space were increased beyond 3000 c.cm. no amount of compensation could render efficient lung ventilation possible. It may be objected that machines are to be seen whose artificial dead space ranges up to, and even exceeds, 3000 c.cm., and that they function. This is true; even in the face of such a huge dead space, an apparently insuperable obstacle, respiratory exchange can be effected. However great the volume of artificial dead space between the lung alveoli and the source of supply, gaseous equilibrium will eventually be reached between the two, by the physical process of diffusion of gases, but before this equilibrium has been reached the patient will have experienced a period of respiratory discomfort, depending in duration and severity upon the

volume of artificial dead space present. It is essential, if physiological principles are to be reproduced, that the volume of artificial dead space be reduced to the smallest possible proportions. The greater the volume of efficient lung ventilation, the more flexible will be the method, and since, in anaesthesia, everything is conspiring against the maintenance of a large tidal air volume, it is the more imperative that artificial dead space be kept as small as is mechanically possible.

As rebreathing plays such a part in the administration of gaseous anaesthetics in the open methods, what will be the effect of reducing the volume of artificial dead space to zero? The body has no difficulty, in the presence of an adequate supply of oxygen, in maintaining a normal alveolar carbon dioxide content in the presence of an atmosphere containing no carbon dioxide at all. Increased lung ventilation, with consequent fall in alveolar carbon dioxide content, produces apnoea which will continue until alveolar carbon dioxide is raised to normal physiological limits when, in the presence of an adequate supply of oxygen, breathing will be resumed without periodicity. But because of the depressing effects of anaesthetic agents, because of the toxic and shocked condition of many anaesthetised subjects, it is not wise to depend upon the body's protective reactions, but rather to use the stimulating action of added carbon dioxide whenever it is clinically indicated. By means of a by-pass on the soda-lime canister the carbon dioxide content of the system can be rapidly and readily built up to the desired level without upsetting the physiological balance. There is no reason, therefore, if a by-pass is provided on the canister, why the volume of artificial dead space should not be reduced to zero. It is imperative, in a closed system of anaesthesia, that artificial dead space be reduced to the smallest possible proportions, and that a by-pass be provided on the canister for the therapeutic use of carbon dioxide.

Oxygen supply.—Once anaesthetic equilibrium has been attained at the depth required, the metabolic rate of the patient is almost constant and the patient's blood is in gaseous equilibrium with the contents of the closed system. The pressure in the system at this point, as read on the manometer, is a numerical index of the depth of anaesthesia, and if this pressure is kept constant the level of anaesthesia will remain stationary. Anaesthetic agents are excreted almost completely and in exactly the same form as that in which they were absorbed. Consequently no loss of pressure will result as far as they are concerned. Because the system is closed it is essential that the carbon dioxide of each expiration should be completely absorbed by the soda-lime, and that the volume of oxygen used with each inspiratory effort should be replaced by the introduction of a corresponding volume of oxygen. The absorption of the carbon dioxide will cause a fall in pressure in the closed system, but because the metabolic rate is constant, the output of carbon dioxide, and the consequent fall in pressure due to its absorption, will be a constant fixed value. The volume of oxygen necessary for replacement will therefore be that amount which will neutralise the fall in pressure caused by the absorption of carbon dioxide. It will also be a constant fixed amount. Having attained anaesthetic equilibrium, the amount of oxygen necessary to maintain the partial-pressure constant will be the greatest amount that will not cause a rise in pressure in the closed system. This amount of oxygen will be the correct volume only if it is fed into the system in such a manner that it is all available with each inspiratory effort. The possibility of oxygen being backwashed and remaining in the system to dilute the anaesthetic contents must be averted. This is achieved if the oxygen is fed into the inspiratory flow of a two-phase circuit as near the mask as possible, a method which allows of a rapid and minute control of oxygen, with ease of adjustment, and which, in an emergency, makes it possible to deliver oxygen direct to the patient.

These five factors are the bare essentials which must be satisfied if a closed system of anaesthesia is to conform to correct physiological principles. An additional principle presents itself, which while not essential to the success of the method makes for ease

of control. With the patient in anæsthetic equilibrium, the oxygen inflow adjusted, the carbon dioxide being absorbed, and the system efficiently closed, the third factor, the partial pressure of the anæsthetic agent in the system will also remain constant and the depth of anæsthesia will consequently be maintained at a fixed level. The pressure in the system is lowest on inspiration and highest at expiration. One must take the inspiratory pressure as the true or actual pressure at which one is working, and the difference between this and the expiratory pressure as simply a measure of the amplitude of respiratory movement. If a slight leak occurs—the junction of the mask with the face is the only probable site—the pressure in the system will gradually fall and the depth of anæsthesia will gradually lighten. The leak, when present, occurs during expiration when the pressure is greatest. This is important because the gases to be lost are then chiefly carbon dioxide and anæsthetic agents. If the leak occurred during the inspiratory phase the oxygen regulation would be seriously interfered with.

The loss of carbon dioxide during expiration is of little moment, for it must be excreted and it does not matter whether it is absorbed by the soda-lime or lost into the atmosphere. The loss of anæsthetic agent is of great importance; it must be replaced if the depth of anæsthesia is to remain steady. A lever system controlling the flow of anæsthetic agent from the source of supply to the bag will achieve this object. The screw adjustment can be set to allow anæsthetic agent to flow into the system only when the pressure falls below the predetermined inspiratory pressure. By this means the lever system will automatically allow just so much anæsthetic agent to flow into the closed system as has been lost by the leak, and the pressure of anæsthetic agent is maintained at any predetermined pressure. A machine so designed will conform to correct physiological principles, and once adjusted to the depth of anæsthesia required will regulate itself with the same flexibility as any open anæsthetic machine.

GENERAL CONSIDERATIONS

Inferior samples of soda-lime contain an excessive amount of caustic and as a result cause a dry mouth and throat, and even tracheitis. They may also pulverise to form a fine alkaline dust which causes an irritating cough during induction. I find that this annoying complication is eliminated only when I use Siebe Gorman's protosorb. Protosorb becomes harder on use and does not cause excessive dehydration. After an anæsthetic of one hour's duration 3-4 drachms of water will be found in the bag of my machine, its most dependant part. This saturated water vapour content of the system is beneficial. In filling the canister an air space should be left above the soda-lime on the inlet side to enable the gases to spread out and so diffuse evenly throughout the canister contents.

The use of an outside source of carbon dioxide is neither necessary or desirable; the by-pass on the canister will provide all that may be required. The chemical action of carbon dioxide on soda-lime generates heat. An outside source of carbon dioxide will waste the soda-lime and generate excessive heat. By its use temperatures of up to 45° C. have been registered in the canister. When the by-pass was used to obtain carbon dioxide, even with excessive respiratory effort the temperature has never exceeded 38° C., and, with the bag and the length of the inspiratory phase to act as distributors of heat, the temperature in the mask has never exceeded 37° C. The heating

of gases is adequate but not excessive if the by-pass is used. The alkalinity and filtering action of the soda-lime renders the system bacteriologically sterile, and the closed system makes the possibility of anæsthetic explosions very remote.¹

The economy is striking. Anæsthetic agents are lost only during induction when the system is open in order to eliminate nitrogen. From this time onwards the replacement which may be necessary due to leakage is very small. During two operating days at St. Peter's Hospital, the measured quantities used for twelve cases, two of which were short open anæsthetics, were:—

Nitrous oxide	..	..	100 gals.	5s. 8d.
Oxygen	..	..	120 "	5s. 0d.
Ether	..	..	16 oz.	5s. 0d.
Soda-lime	..	..	5½ lb.	6s. 6d.

This is equivalent to a cost of 1s. 10d. per anæsthetic. Using 6-10 mesh, my canister takes a charge of ¾ lb. of soda-lime, which is sufficient for an anæsthetic lasting from one to one and a half hours, depending on the patient's metabolic rate.

CLINICAL FACTORS

The accompanying Figure is a diagrammatic representation of the two-phase circuit. There is a clear-cut expiratory phase from the mask to the bag with the soda-lime in series. This ensures that the bag will contain oxygen and anæsthetic agent at the pre-

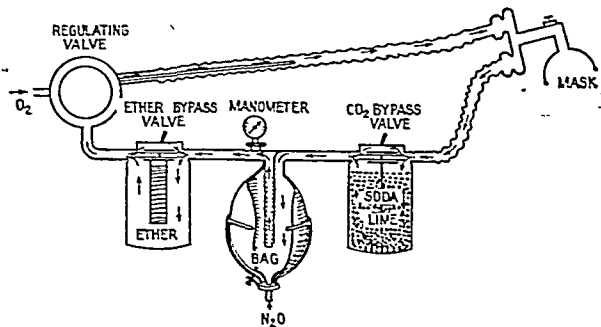


Diagram of the closed circuit.

determined pressure, plus just that amount of carbon dioxide which has been determined by the use of the by-pass. The inspiratory phase is straight from the bag to the mask, picking up its quota of oxygen necessary for replacement high up in the inspiratory flow. An ether reservoir and a gas-regulating valve are set in series. The contents of the bag and the incoming oxygen are communicated to the patient with the very next inspiration as the volume of efficient lung ventilation is as high as possible, and thus control is very flexible. The machine I use has four controls: a valve regulating the proportions of nitrous oxide and oxygen; a carbon dioxide absorber, which can be turned on or off; an ether control which can be turned on or off; a pressure-adjustment screw to regulate the pressure, with a manometer and an expiratory valve on the mask.

Induction is invariably carried out with nitrous oxide irrespective of what sequence is to follow. With the expiratory valve on the mask open and the soda-lime by-passed the machine is a simple open apparatus.

The oxygen and nitrous oxide having been turned on at the source of supply, the mask is applied and the

¹ Harris, T. A. B.: Brit. Med. Jour., 1933, II., 1203.

regulating valve turned to full nitrous oxide. As induction proceeds oxygen is cautiously added with this regulating valve. After 10 to 15 expirations the nitrogen which was present in the machine and the pulmonary system has been excreted through the expiratory valve on the mask. An airway is inserted, the mask accurately adjusted and fixed with Clauson's harness, and the machine is closed by shutting tightly the expiratory valve on the mask. Should carbon dioxide be required to hasten induction the carbon dioxide absorber valve is left in place, and when this has been achieved it is turned to the "on" position and the absorption of carbon dioxide begins. The pressure is then adjusted by means of the screw on the lever system to the clinical requirements, and the oxygen inflow accurately controlled by means of the regulating valve to an amount which will not increase this predetermined pressure. Ether is added if relaxation is needed. The pressure and the amplitude of respiratory movement are noted for future reference. From this time onwards nitrous oxide is regulated by the lever system, oxygen is regulated to the patient's metabolic rate, and carbon dioxide absorption is complete.

Most information is gained from the manometer. A rise in pressure can be due to two causes.

(a) The inefficient absorption of carbon dioxide. There is no excuse for this occurring, for the change in colour of the protosorb in the glass canister gives ample warning. Should it occur the expiratory valve on the mask is opened and the carbon dioxide absorber valve is turned to the "off" position, when the canister can be removed, recharged, replaced, the system closed again and absorption recommenced.

(b) If the soda-lime is efficient then a rise in pressure will be due to a too great supply of oxygen. More oxygen is being supplied than is necessary for replacement. The oxygen supply must be reduced by the regulating valve until the pressure as recorded on the manometer returns to its predetermined reading or the colour begins to fail, when the oxygen supply is more carefully adjusted.

The amplitude of swing of the manometer needle tells of the activity of the respiratory centre. Should the amplitude of swing fall below 3 mm. of mercury the carbon dioxide absorber valve is turned to the "off" position, when carbon dioxide rapidly accumulates in the system with the desired clinical result. It is important to keep respiratory movements within normal limits. A reduction of respiratory movement means a depressed respiratory centre, but in addition this diminution of movement hinders the efficient filling of the right heart, and cardiac output is reduced with a fall of blood pressure which materially embarrasses an already depressed respiratory centre. Depth of anaesthesia can be rapidly lightened by reducing the pressure in the system, this reduction can be made delicately if the manometer is referred to during the adjustment. Anaesthetic equilibrium having been reached at the depth required the machine will regulate itself and the manometer will, in the presence of a clear airway, give the exact and adequate information necessary for the protection of the patient.

Should the anaesthetic be prolonged, or the patient be a poor subject, the complication of an altered susceptibility appears. This ranges in relative intensity, from mere depression of the respiratory and cardiovascular systems to established surgical shock. Depression, as indicated by the irregular or reduced amplitude of respiratory excursions, is countered by an increase in the carbon dioxide content. It is necessary to overcompensate, but when the increased breathing returns to normal the body will maintain the correct physiological alveolar carbon dioxide content for some considerable time. The continuous by-passing of even small amounts of carbon dioxide

is incorrect, but as the depression becomes more intense the anaesthetist will make more frequent use of the by-pass valve and may even decrease the pressure in the system. As the depression increases in degree, in addition to the use of carbon dioxide, he will have to increase the supply of oxygen. Thus as anaesthesia proceeds two states preceding shock can be recognised, one of which carbon dioxide will hold in check, and the second which requires, in addition to carbon dioxide, an increase in the oxygen supply. If these states are recognised comparatively early, this technique will arrest their onset.

When, however, the exhibition of carbon dioxide and excess of oxygen fail to relieve the condition, surgical shock is definitely established. The patient's susceptibility to anaesthetic agents is definitely raised, and one must reduce the pressure in the system—that is, reduce the partial pressure of anaesthetic agents or the anaesthetic contents of the system—and take the necessary therapeutic measures to counter this shock. The clinical condition of shallow and irregular breathing, inspiratory tugging, a fall of blood pressure, and a soft and rapid pulse may indicate three errors: (1) respiratory depression due to faulty absorption of carbon dioxide; this is readily diagnosed; (2) a bad airway; by listening with the breathing tubes held close to the ear one can easily determine this fault; (3) nitrogen in the system; if the expiratory valve on the mask is opened for 10 to 15 expirations any nitrogen present will be excreted. If, after these manoeuvres, this syndrome is not relieved then advanced surgical shock is established.

An increase in pressure in the system when nitrous oxide and oxygen alone are being used will increase depth of anaesthesia only within narrow limits, but if a lipid soluble anaesthetic is employed it offers a very effective means of increasing depth. At the same time I do not consider this to be the method of choice; I believe that the smallest satisfactory pressure is the correct one, and work usually at from 4 mm. to 7 mm. of mercury. Carbon dioxide is used only when it is clinically indicated, and not more or less empirically, as in open anaesthesia. It is my impression that the excessive use of this powerful respiratory stimulant in open anaesthesia is responsible for the unwarranted shock which sometimes follows a N_2O oxygen anaesthetic. By the use of constant rebreathing one is in effect "whipping a tired horse." In closed anaesthesia, on the contrary, with a machine of correct physiological design, carbon dioxide is used only as the clinical condition of the patient indicates. The anaesthetic which results is smooth, with quiet breathing, and one is struck by the pink colour which it is possible to maintain throughout. Relaxation is achieved with a minimum of toxic anaesthetic agent, and recovery is consequently rapid and can be materially hastened by a reduction of pressure and the use of carbon dioxide.

In my opinion, if the physiological principles outlined above are satisfied, the anaesthetic which results will be more physiologically correct than it is possible to achieve with open methods. Heat loss is at a minimum, the water vapour content is always saturated, cyanosis should never occur, and, because the oxygen supply must always be adequate if the system is to function, relaxation is attained with a minimum of toxic anaesthetic agent the elimination of which is correspondingly rapid, so that the patient's cough reflex is almost always present before leaving the theatre. Moreover, a machine fulfilling these conditions is flexible to manipulate.

TREATMENT OF COLLES'S FRACTURE

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BRIEFLY the principles of treatment of Colles's fracture are reduction, fixation of the fragments, and early active movements of the fingers. Reduction is usually effected either by the shaking-hands method or by the method of Robert Jones. The position in which the wrist-joint should be fixed has been much discussed and in this country one of two positions is commonly employed.

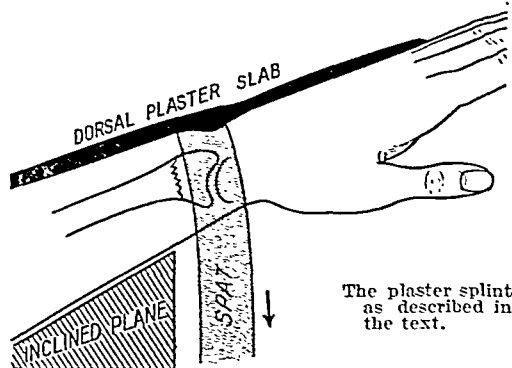
In the first a Carr's splint is applied, the wrist-joint being slightly dorsiflexed; in the second, the wrist is held in a position of plantar flexion and ulnar deviation, usually by the application of a plaster splint. When a Carr's splint is used, unless the fracture happens to be one in which the reduction is stable, the displacements are liable to recur. Moreover Carr's splint is a clumsy piece of apparatus, and though the patient can move his fingers that is the utmost he can do with the affected hand. When the wrist is fixed in full flexion and ulnar deviation the displacements are unlikely to recur as long as this position is maintained, but active movements of the fingers are very difficult. Another and more serious drawback to this position of the wrist is that it may sometimes result in a median neuritis.¹

Böhler's method of treating Colles's fracture consists of reduction by steady manual traction in the long axis of the forearm and fixation of the fragments by an unpadded plaster splint with the wrist-joint in such a position that the dorsa of the hand and of the forearm are in a straight line. This allows free movement of the fingers and the patient can use his hand, but a consideration of the anatomy of the capsule of the wrist-joint and of its ligaments will show that by this method complete restoration of the normal anatomy of the radius is impossible. The best result obtainable is that the distal articular surface of the radius is at right angles to the long axis of the forearm. In spite of this it is a better method than either of those previously described, as secure fixation of the fragments is effected, the patient can still carry out active movements of the fingers, and can use his hand from the very beginning of treatment.

Acting on the belief that accurate re-position of the fragments was essential, and bearing in mind the importance of early active movement, a method was devised to secure both those objects. The patients were fully anaesthetised by open ether. Reduction of the fracture was effected by the shaking-hands method, with care to make sure that the lower fragment was disimpacted. The problem then was to keep the lower fragment accurately in position while applying a plaster splint which would fix the wrist-joint with the dorsum of the hand and of the forearm in line. This was solved by the use of a spat as follows:—

A loop of 1½ in. bandage was placed over the forearm so that it rested over the lower fragment. Into the rest of the loop, which should be almost but not quite long enough to reach the floor, the operator placed his foot. The fully pronated forearm was then supported on an inclined plane, made of two or three small sand-bags, which rested on a small table level with that on which the patient was lying and placed alongside it. The

fingers were gently pulled upon by one hand of an assistant, so as to keep the wrist-joint in the position previously described, while with his other hand the assistant held down the forearm near the elbow. By gentle pressure with his foot in the loop of bandage the operator maintained the corrected position of the lower fragment while the splint was being applied. This was an unpadded plaster splint and consisted of a dorsal slab, extending from the level of the knuckles to just below the elbow-joint, held in place by a circular plaster bandage. The wrist-joint was included in the plaster and the hand fixed to the dorsal slab by a strip of plaster which crossed the palm of the hand obliquely so as to allow full flexion of the metacarpo-phalangeal joints. The forearm was of course lifted by the assistant while the circular bandage was being applied. The essential point of the technique is that moulding of the plaster round the lower end of the forearm and the wrist-joint should be accurately carried out; in particular the plaster should fit well into the depression produced by the spat, on the dorsum of the wrist-joint. As soon as the plaster had set the bandage was cut off close to the plaster. A glance at the diagram will illustrate the points mentioned. Two 4 in. plaster bandages 3 yards long were used to make the splint. When swelling of the wrist was so marked as to cause anxiety, the patient was kept under observation for



24 hours after the application of the plaster, the limb during this time being elevated. X rays were taken before and after reduction, and an X ray should be taken at the end of a week to see whether the fragments are still in position, as in those cases in which considerable swelling is present when the plaster is applied, slipping of the fragments is apt to occur as the swelling subsides and the plaster become slack. Should this have occurred it is not yet too late to re-correct the fragments and apply another plaster. Active movements of the fingers and the use of the hand were encouraged from the start of treatment and massage was not employed.

Nine patients, all women, six of whom were over 60 and the remaining three 45 years or over, were treated during January–June of 1934. They were asked to come to hospital to be examined in January of this year. Six of them did so, two did not reply, and one wrote in reply to the follow-up letter. In three cases the lower fragment was found to have slipped back. This was discovered in two of these when X rays were taken 18 days and 9 days respectively after the application of the plaster. In both there had been an interval—four days in one case and three days in the other—between the fracture and the reduction, and there was considerable swelling of the wrist-joint at the time of reduction. The third case had the following history:—

F.74. Fracture 15/2/34. Reduced 16/2/34. Plaster changed two weeks after reduction and taken off altogether a week later. She was discharged a week later—i.e., four weeks after the fracture—with full movements of the fingers and wrist, except for 20° limitation of full extension and slight limitation of supination. She was seen 11

¹ Cabot and Saunders: Surg., Gyn., and Obst., 1933, Iviii, 207–516.

months later and X rayed. The function of the hand was good, the grip was equal to that of the opposite hand, she had no pain in the wrist, and there was slight limitation of flexion and supination. The X ray showed that the lower fragment had rotated backward.

These cases illustrate the need of X raying the wrist at the end of a week as a routine, or sooner if the plaster has become slack. Of the remaining six patients, slight over-correction of the lower fragment had occurred in four of them. This had had no ill-effect on the ultimate result, as two of them who were seen nine months after the fracture had no limitation of any movement in the wrist-joint or of pronation or supination. The third wrote to say that she had no trouble with the wrist. A feature which was observed in four of the cases treated was a shortening of the lower end of the radius resulting in a subluxation of the distal radio-ulnar joint. This was not due to a recurrence of the deformity as in all these cases the lateral X rays showed that the backward rotation and displacement had not recurred. The fourth case illustrates this point:—

F.61. Left Colles's fracture 24/4/34. X ray before reduction showed considerable backward rotation and displacement with subluxation of the distal radio-ulnar joint. Reduced 24/4/34. X ray after reduction showed that an almost perfect anatomical repair had been attained. An X ray taken on 18/5/34—i.e., 24 days after the date of the fracture—and its reduction, with the original plaster still in situ, showed that in the A.P. view the radius seems to have shortened a little and the subluxation of the distal radio-ulnar joint has recurred. The lateral view shows that no recurrence of the backward displacement nor of the backward rotation has occurred. The plaster was removed 36 days after reduction and the patient was discharged two weeks later—i.e., nearly six weeks after the date of the fracture—with good movements. She was seen and X rayed nine months after the date of the fracture. The function of the hand and the grip was as good as that of the opposite hand. The only loss of movement was slight limitation of pronation. There was no pain at the wrist.

A frequent association was observed between subluxation of the distal radio-ulnar joint and pain over the region of the head of the ulna, but this pain did not persist and disappeared in the course of time. Thus of five cases in which subluxation of the distal radio-ulnar joint was present and produced either by shortening of the radius after reduction or by failure to correct this deformity adequately, three when seen nine months after had no pain in the wrist, and the only abnormality as far as movement was concerned was slight limitation of pronation in one of them. Subluxation of the distal radio-ulnar joint was demonstrated to be present by X rays taken then. The fourth wrote to say that she had no pain in the wrist-joint. The fifth case was as follows:—

F.65. Right Colles's fracture 4/4/34. X ray showed extensive comminution of the lower fragment extending into the wrist-joint, with considerable backward rotation and displacement, fracture of ulnar styloid, and subluxation of the distal radio-ulnar joint. Reduced 4/4/34, slight over-correction of the antero-posterior displacements; subluxation of distal radio-ulnar joints, not fully corrected. 27/4/34: plaster removed (23 days). X ray showed lower fragment still slightly over-corrected, but shortening of the radius with an increase in the degree of subluxation of the distal radio-ulnar joint had taken place. The patient attended the fracture clinic for a further three and a half months. 15/3/35 (11 months): dorsiflexion full, flexion slightly limited, pronation full, minimal limitation of supination. The grip was good

and the hand was quite useful. On prolonged gripping the patient gets pain over the lower end of the ulna in proximal to the styloid process. Flexion of the fingers was not quite perfect and the pain over the lower end of the ulna was worse in cold weather.

An X ray showed osteo-arthritic changes in the radio-carpal and distal radio-ulnar joints, and there was a considerable degree of subluxation of the distal radio-ulnar joint present. It seems likely that her arthritis was produced by the damage to the wrist-joint and that the residual pain is due to the arthritis and not to the subluxation of the distal radio-ulnar joint.

It was found possible to retain the original plaster for periods which varied between 2 weeks and 36 days, and with two exceptions the patients were discharged from 4-7 weeks after the date of the fracture.

I should like to express my indebtedness to Mr. Gwynne Williams and Prof. C. C. Choyce for help and criticism, to Mr. C. W. Flemming and Mr. Williams for permission to publish this account of cases under their care, and to Miss M. Scott for the diagram.

CONGENITAL ATRESIA OF THE DUODENUM

IN A CHILD AGED THIRTEEN MONTHS

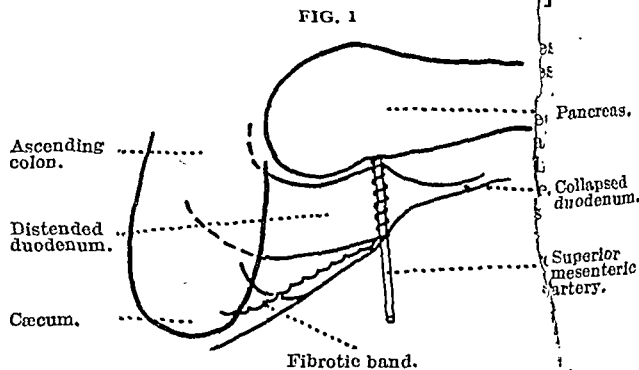
By T. G. D. BONAR, M.D., M.S. Lond.

HON. SURGEON TO THE EVELINA HOSPITAL FOR CHILDREN, LONDON

CONGENITAL atresia of the duodenum is a comparatively rare condition, and the following case may be of some interest.

REPORT OF CASE

A girl, aged 13 months, was admitted under my care to the Evelina Hospital for Children because of vomiting, which began on Feb. 28th for the first time. On that day she vomited her food twice, but no bile was noticed by her mother and she did not seem to be in any pain. The bowels had acted once. The child had always enjoyed good health and had been breast-fed up to the age of

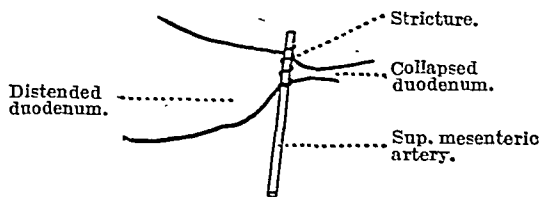


8 months. On March 1st she vomited her food three times, but nothing else abnormal was noted by the mother. She passed a normal motion. On March 2nd she vomited several times and so the mother decided to bring the child to hospital, particularly as she had noticed "swelling of its stomach." The bowels had been opened.

On admission the child looked very ill and was vomiting every few minutes a watery fluid which was not bile-stained. The vomiting was projectile and was preceded and accompanied by signs of abdominal colic—screaming and drawing-up of the legs. On examination it was noticed that the child had obliquely set palpebral fissures and a long protruding tongue and was edentulous. There were

signs of serious dehydration, the eyes were shrunken, the anterior fontanelles depressed, and the skin and tongue dry. There was great distension of the upper abdomen, and also down the right side to the iliac fossa. Large peristaltic waves could be seen commencing at the left subcostal region passing to the right hypochondrium and then to the right iliac fossa. Usually there were about three waves every minute, but on occasions and following abdominal palpation a second wave made its appearance before the preceding one had disappeared. At other times no waves were seen for several minutes; with the onset of each wave the child drew up its legs and screamed. At intervals of 3-5 minutes the child vomited in a projectile manner. The tense appearance of the upper and right quadrants of the abdomen was confirmed on palpation. The pylorus was not palpable. A succussion splash was heard. No free fluid was demonstrable. Rectal examination was negative. Heart: not enlarged; sounds

FIG. 2



normal. Pulse: 150, regular; volume poor. Lungs: no dullness; breath sounds normal.

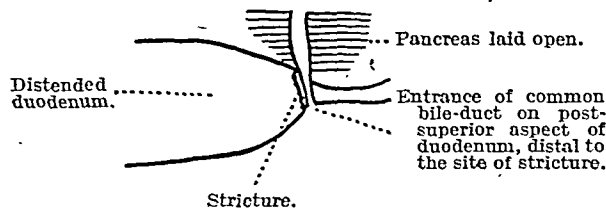
A diagnosis was made of acute obstruction supervening on chronic obstruction in the duodenum. Immediate operation was decided on.

Operation.—Under gas-and-oxygen, a small quantity of ether being given for opening and closing the peritoneal cavity, a supra-umbilical right paramedian incision was made, the rectus being drawn laterally and the peritoneum opened. The stomach and the first and second parts of the duodenum were found to be enormously distended, so much so that the caecum and ascending colon were lifted anteriorly by the distended duodenum. There was a distinct whitish, constricted area a few millimetres wide, running transversely in the wall of the duodenum dividing the dilated proximal part from the normal, but collapsed, distal portion of the duodenum. At this point the duodenum was crossed by the superior mesenteric vessels ensheathed in dense fibrous tissue forming a raised white fibrous band extending on to the anterior surface of the caecum. The constricted area on the duodenum, on macroscopic examination, suggested that fibrotic changes had set in. There were some enlarged glands on the surface of the head of the pancreas which did not appear to be rotated. There were also glands in the mesocolon in close relation to the branches of the arteries.

and glands were especially noticed in the mesentery of the small intestine.

A duodeno-duodenostomy was considered but was found to be impossible and a duodeno-jejunostomy was also

FIG. 3



found to be impracticable because of the enlarged glands on the head of the pancreas. A posterior gastro-jejunostomy was carried out—as advocated by Downes, Max Page, and others—but the obstruction appeared so complete that pyloric occlusion, which is advocated in addition by some surgeons, was deemed unwise. This operation was carried out as expeditiously as possible and without difficulty; the wound was closed in layers. It took 25 minutes and saline was given subcutaneously. The condition of the child on returning to bed was extremely grave. Some hours after the operation the child died.

Post-mortem examination was carried out the next day. No abnormalities were discovered in the lungs, heart, liver, spleen, small and large intestine, or kidneys. The stomach, duodenum, pancreas, and the gastro-jejunostomy were removed in one piece, together with the caecum, ascending and transverse colon. On laying open the stomach, which was dilated, the walls were found to be hypertrophied. The pylorus was open. The duodenum was dilated as far as the stricture, and the walls above the level of the stricture were also slightly hypertrophied. The mucous membrane was congested in both the stomach and duodenum.

The stricture in the duodenum was found to encircle it completely and measured in breadth about 2 mm. It appeared fibrotic and extended throughout all coats of the duodenum so that there was a fibrotic area, surrounded by mucous membrane, on the mucous side of the bowel. This strictured area was exactly at the point where the superior mesenteric vessels passed over the duodenum. The pancreas appeared

normal and the superior mesenteric vessels were in their normal anatomical situation. On the head of the pancreas were some very enlarged lymphatic glands. Macroscopically these showed inflammatory changes. A long but very definite fibrotic band ensheathed the superior mesenteric vessels and running downwards to the right ended on the anterior surface of the caecum. Enlarged glands, inflammatory in type, were found in the transverse mesocolon and also in the mesentery of the small intestine. There was no sign of tuberculosis.

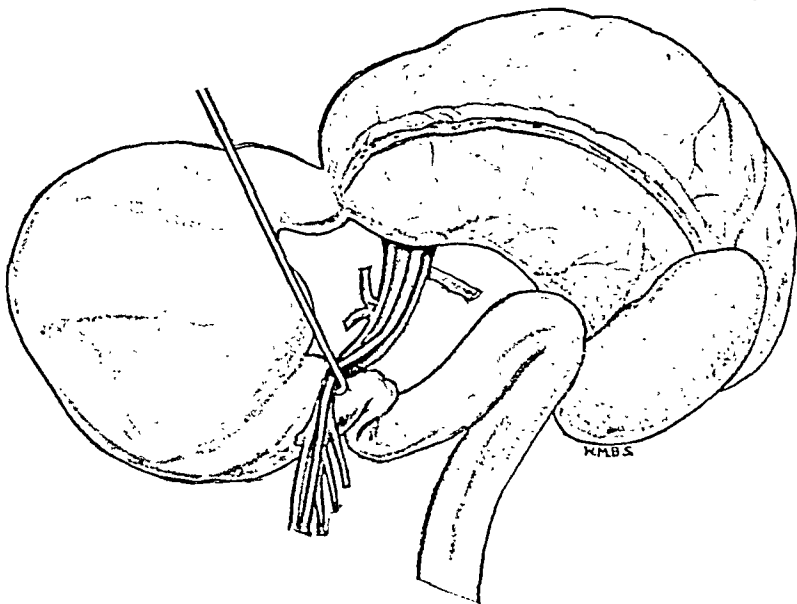


FIG. 4.—Congenital occlusion of the transverse part of the duodenum at the point at which the me-enteric vessels cross. Note the extreme distension of the proximal portion of the duodenum. (From "Surgical Emergencies in Children," Baillière, Tindall and Cox, in the press.)

Dissection of the specimen.—My house surgeon, Dr. N. Townsley, made a difficult dissection of the duodenum and pancreas to demonstrate the common bile-duct and the pancreatic duct. The dissection showed that the ampulla of Vater was situated in the distal part of the duodenum, immediately beyond the stricture. The pancreatic duct seemed to enter at the same site. It was interesting to note that the common bile-duct passed directly downwards through the substance of the pancreas and in the same axis into the duodenum, appearing from the outside as if it were going to enter at the site of stricture. No rotation of the pancreas was apparent, and this seemed to prove that as the second part of the duodenum gradually became dilated it had not rotated downwards carrying the head of the pancreas with it. Microscopical section of the stricture showed that the mucous membrane, muscular and peritoneal coats in the area were replaced by fibrous tissue. An attempt to get a fine tube through the stricture failed.

The accompanying sketches of the dissection (Figs. 1-4) will perhaps explain more clearly what was found.

ÆTIOLOGY OF THE CONDITION

Congenital atresia of the duodenum was first described by Calder¹ in 1733. Davis and Poynter² collected 392 cases of congenital occlusion of the intestine between the pylorus and the rectum; a single atresia of the duodenum or jejunum was found in 194, and in 134 of these it was in the duodenum. Out of 184 cases of congenital occlusion of the intestine collected by Kuliga,³ 46 were in the duodenum. Schlegel, quoted by Braun, found that the occlusion was in the duodenum in 32.5 per cent. of cases, usually in the region of the ampulla of Vater, but occasionally at the junction of the duodenum and jejunum (Cordes,⁴ 5 out of 57 cases).

Cautley⁵ distinguishes two groups in which the defect is in the neighbourhood of the ampulla of Vater (67 out of 92 cases investigated by Spriggs) in one and usually at the level of the duodeno-jejunal flexure in the other. The first is subdivided into cases occurring above, opposite or below the papilla. Cordes⁴ says that in his series 20 instances were above the papilla (10 of these were immediately above), 6 were opposite the papilla, and 13 below the papilla. Cautley emphasises that mere narrowing—i.e., annular constriction partially or entirely obliterating the lumen—is very rare.

Jewesbury⁶ quotes 2 cases of duodenal obstruction in infants. In one the stricture was between the second and third portions of the duodenum, but there was no evidence of compression from the surrounding strictures; and in the other it was at the level of the duodeno-jejunal junction. In this case the cæcum was high (as in the case here reported), and the obstruction was caused by pressure from outside and in particular the right colic artery.

In the case I have described above it was noticed that the site of obstruction was exactly where the superior mesenteric vessels crossed the duodenum, and at the time of operation the case was thought to be one similar to that described by Downes,⁷ who noticed on X ray examination the obstruction ended abruptly at the site of the superior mesenteric artery; but it was difficult in my case to say why no bile had appeared even in the vomit. This was accounted for post mortem, when it was noted that the common bile-duct ran directly downwards from the superior to the inferior borders of the pancreas and opened directly on to the postero-superior aspect of the duodenum, beyond the stricture.

The operation was also of interest. The ideal seemed to be either a duodenoduodenostomy or a duodenojejunosomy. Mention has already been made of how impossible it was to do either of these

and one was compelled to carry out a posterior gastrojejunostomy. This agreed with the operation advocated by others—namely, a gastro-enterostomy with or without pyloric occlusion.

It appears that in this case the atresia was gradually becoming more and more complete and the superior mesenteric vessels were only incidental in completing the onset of an acute obstruction.

According to Tandler,⁸ Forssner,⁹ and Huerter,¹⁰ the Vaterian segment of the duodenum is occluded by epithelial proliferation during the second month of foetal life and atresia is due to failure of the plug to break down or become canalised. In my case canalisation had apparently taken place, but one area had become replaced by fibrous tissue which had gradually but surely led to atresia, which had contracted down leading to the onset of the acute obstruction.

I am indebted to Mr. Harold Edwards for allowing me to reproduce the drawing (Fig. 4) illustrating this case, which he had made for his book "Surgical Emergencies in Children," to be published shortly.

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Clinical and Laboratory Notes

MONOCYTIC (HISTIOCYTIC) LEUKÆMIA

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THE subject of monocytic leukæmia and reticulo-endothelioses in general has recently attracted a good deal of attention, and Ross¹ states that 22 histologically authenticated cases are on record. The one here described cannot be included in the group of histologically authenticated cases, for, to the best of my knowledge, the patient is still alive; he removed from the district in which he was living and repeated inquiries have failed to trace his present abode. Nevertheless, I think the blood picture as here presented leaves no doubt that the case was one of monocytic leukæmia.

A man aged 48, a canvasser, was admitted to Lambeth Hospital on August 17th, 1933, complaining of shortness of breath, palpitation, loss of appetite, and swelling of the ankles on exertion. He had had bronchitis in 1925 and pleurisy in 1926. The family history contained nothing relevant to his present illness.

On examination he was dyspnoeic, cyanosed (particularly the ears), and anæmic, and had clubbed fingers. There were signs of mitral disease, but no oedema. In the lungs, abdomen, and central nervous system, nothing noteworthy was found. He had "gross pyorrhœa" but no ulceration of mouth or pharynx. Radiography of the chest showed "no unusual opacities." The Wassermann and Kahn reactions were both strongly positive.

¹ Ross, J. M.: Jour. Path. and Bact., 1933, xxxvii., 311.

Progress.—Blood counts from Sept. 12th, 1933, to July 13th, 1934, are summarised in the accompanying Table.

Teeth were extracted on the following dates: August 26th, 1933, Sept. 2nd and 9th, Nov. 4th, 20th, and 25th, and Dec. 2nd, 9th, and 18th, and a good deal of bleeding following each extraction, though it usually

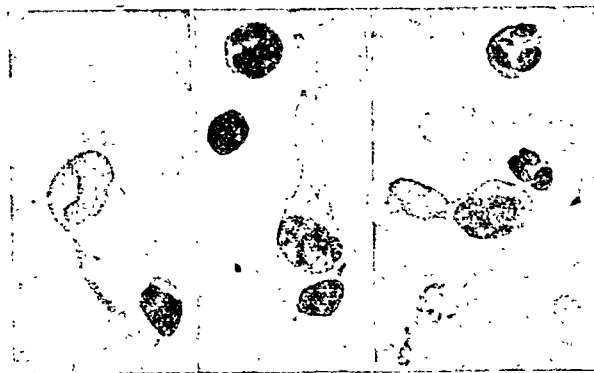
Table of Blood Counts

	Hæmoglobin %.	Red cells (millions).	Colour-index.	White cells (thousands).	Polymorphs (neutrophils) %.	Polymorphs (eosinophils) %.	Eosinophils %.	Lymphocytes %.	Monocytes %.
1933.									
Sept. 12	42	2.72	0.77	21.8	31.3	0.3	0	26.7	41.7 (1.0)
" 13	—	—	—	64.8	15	0	0	59	26 (8)
" 14	—	—	—	77.2	24	0	0	50	26 (2)
" 15	42	2.63	0.8	39.6	22	0	0	48	30 (6)
" 18	—	—	—	144.8	19	0.5	0	41	39.5 (0)
" 21	42	2.89	0.77	90	29	1	0	45	25 (4)
" 29	44	3.00	0.73	180	27	1	0	57	15 (2)
Oct. 4	—	—	—	227	23.5	5.5	0	38	33 (2)
" 9	—	—	—	134	50	11	0	23	16 (1)
" 17	44	2.87	0.78	64	53	3	0	31	13 (1)
" 26	48	3.10	0.77	40.6	59	2	0	21	18 (2)
Nov. 14	42	2.66	0.8	6.8	61	3	0	33	3 (2)
" 28	66	3.23	1.03	7	59	1	0	31	9 (2)
Dec. 20	—	—	—	20.6	39	1	0	56	4 (3)
1934.									
Jan. 22	24	1.57	0.8	4.8	45	5	0	38	12 (9)
Feb. 14	20	2.15	0.48	5.2	40	8	0	45	7 (4)
" 28	20	1.8	0.55	3.4	56	3	0	35	6 (6)
Mar. 8	24	2.25	0.53	4.6	36	0	3	40	21 (5)
May 4	48	3.3	0.73	2.5	32	0	0	59	0 (0)
July 13	54	3.15	0.8	24	24	0	0	22	54 (4)

ceased in a day or two. A course of antisyphilitic treatment (neoarsphenamine and bismuth oxychloride) was begun on Sept. 23rd, 1933. On Oct. 16th it is noted that the patient was languid; the spleen was palpable, being 2 in. below costal margin. On Oct. 23rd the liver was still palpable. On Nov. 6th however it was only just palpable, and again on Jan. 9th, 1934, its tip could only just be felt. The liver was not palpable, but there was some enlargement of axillary and inguinal glands, and a little oedema of feet. On Feb. 5th the spleen was again 2 in. below the costal margin, the liver not being palpable. At the beginning of May, 1934, the patient was transferred to St. Mary's Hospital, Sidcup, for convalescence. On July 13th, 1934, he attended Lambeth Hospital for treatment for a carbuncle of the neck, and the blood count taken on that day was the last obtained.

The term "monocyte" as used in the Table includes both the abnormal monocytic forms and the ordinary hyaline forms found in normal blood; the figures in parentheses beneath the percentages of monocytes indicate the number of normal hyaline cells included in each total monocyte count. The abnormal monocyte forms were much larger than the normal hyalines, and the largest encountered measured 43 μ . In Leishman-stained films the cytoplasm was generally of a pale pinkish-blue with rather a "ground-glass" appearance, frequently exhibiting pseudopodia and long, tapering processes; vacuolation of the cytoplasm was seen in many. For the most part the cytoplasm

was finely granular, the granules being of an azure colour and arranged near the nucleus. The shape of the nuclei varied; some were oval, others reniform, and a few were lobulated; all nuclei were rather pale-staining and showed a fine reticular chromatin network. No nucleoli were observed. In many cells, inclusions of erythrocytes and erythrocyte remnants were seen. Almost the whole of these cells were oxidase-negative, the very few which were



Monocytes in blood films.

positive being but faintly so. Supravital staining, using a modified Sabin technique as described by Orr,² gave the characteristics of the monocyte.

My thanks are due to the late Dr. J. A. Braxton Hicks, group pathologist at Lambeth Hospital; to Dr. P. J. Watkin, medical superintendent of the hospital, for his permission to use the clinical records; to Dr. E. N. Allott, group pathologist at Lewisham Hospital, for the blood count of May 4th, 1934, whilst the patient was in St. Mary's Hospital, Sidcup; and to Dr. J. E. McCartney, director of pathological services, L.C.C., for the photomicrograph.

FOREIGN BODY IN THE BLADDER ASSOCIATED WITH PREGNANCY

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THE case here described presents certain points of interest, both obstetrical and urological, in that an attempt to produce abortion by the introduction of slippery elm was followed by normal labour and delivery of a full-term infant, but resulted in considerable damage to the urinary tract.

The patient, a married woman aged 39, was admitted to St. Mary Abbot's Hospital, Kensington, on May 15th, 1935, having been sent by her own doctor with a diagnosis of 34 weeks' pregnancy complicated by carcinoma of the bladder and vagina. She had had six previous normal labours.

On admission she gave a history of dysuria, incontinence of urine, and a blood-stained vaginal discharge for the past six months. Examination showed a 36 weeks' pregnancy, vertex presentation with the head engaging, whilst inspection of the vulva revealed a small amount of granulation tissue surrounding the urinary meatus from which turbid urine was dribbling. Per vaginam the cervix appeared normal, but a hard elongated mass was palpated through the anterior vaginal wall, apparently lying in the urethra and bladder. X ray examination showed a cylindrical foreign body having a thin core of lesser density lying

² Orr, J. W.: THE LANCET, 1933, I., 403.

in the region of the urethra and neck of the bladder. The patient was then further questioned and admitted having introduced a piece of slippery elm, into the womb as she thought, during the third month of pregnancy; she left it in situ thinking that it would be absorbed naturally.

She was seen by Prof. James Young, in consultation with Mr. James Carver, and it was decided, in view of the possibility of damage to the bladder and urethra during labour, to remove it forthwith. The patient, however, went into labour unexpectedly next day; this was



12 13 14 15 16 1
The foreign body after removal (scale in inches).

short and uneventful, and she was delivered of a healthy infant weighing 7 lb. There was no apparent damage to the bladder or urethra, as evidenced by the absence of hæmorrhage, but the patient remained incontinent, the temperature was raised, and the urine very foul, cultures of which grew abundant organisms, chiefly of *Staphylococcus albus*.

On the seventh day Mr. Carver again saw the patient with Prof. Young, and in view of the gross infection of the bladder, removal of the foreign body was decided upon. Suprapubic cystotomy was performed next day, and the foreign body, which was projecting from the urethra into the bladder, was removed. It was found to consist of a thin core of slippery elm, about ten inches in length and one-sixth of an inch in diameter, doubled on itself. Superimposed upon this was a deposit of phosphates forming a solid conical mass approximately $4\frac{1}{2}$ in. in length and $2\frac{1}{2}$ in. in diameter at its greatest width (see Figure). A de Pezzer catheter was inserted into the bladder, and six days later was replaced by a Hamilton Irving box. The wound was healed by the fourteenth day, and on discharge the patient was able to hold her water for two hours.

A subsequent intravenous pyelogram showed marked pyelectasis of both kidneys, and a small bladder having a grossly irregular outline.

I am indebted to Mr. Carver and Prof. Young for permission to report this case.

LOCAL TREATMENT OF VASOMOTOR RHINORRŒA

By A. TUMARKIN, M.B. Liverp., F.R.C.S. Edin.

HON. AURIST, BOOTLE HOSPITAL

At present the most popular forms of local treatment for vasomotor rhinorrhœa seem to be cautery and ionisation. It can hardly be doubted that both of these act by a limited destruction of the mucosa, and though the danger of excessive damage by any single application is probably slight we must remember that patients are liable to require treatment every year and the cumulative effect might eventually be atrophic rhinitis with crust-formation. It is

unfortunate that little has been done to ascertain histologically the extent and duration of the effects of ionisation, but McMahon¹ reports that it produces definite destructive changes in the frontal sinuses mucosa of dogs. Further disadvantages of ionisation are that many patients find it trying; that, even when cocaine is used, it may set up uncontrollable sneezing which dislodges the packing and washes away the electrolyte; and (above all) that there is no means of controlling the coagulative effect, which is apt to be locally irregular.

These considerations have led me during the past few years to experiment with chemical caustics. Various strengths of chromic, lactic, trichloroacetic, and finally carbolic acid were tried, and it became clear that a pure solution of the latter was definitely the best. Before going any further, I must say that I felt all along that such a simple line of treatment must have been tried by many rhinologists. I was not aware however of any systematic investigations until recently when I found a report by Chandler² on identical lines, and I gladly acknowledge his precedence.

The technique of phenolisation is simplicity itself. A small cap of cotton-wool, tightly wound on a Heath probe, is dipped into pure phenol. It is lightly rolled on lint to remove the excess, and then rapidly smeared over the nasal mucosa. A mild reactionary rhinitis usually follows for about a day, but there is no discharge of tissue sloughs. The treatment is painless, only taking a few seconds, and assuming reasonable skill in intranasal applications, the surgeon after a little experience can easily grade the intensity of his application.

Two questions at once arise: how much good does it do the patient, and how much harm does it do the mucosa?

Out of 9 patients treated over a year ago 6 remained free of symptoms for a year or more. One relapsed after about a year's freedom, but was again "cured" by further treatment. One derived benefit for only a few weeks, and another for only a few months. Several recent cases have been more resistant, and I am coming to the conclusion that further experience in selecting cases is desirable. In particular, I believe that this line of treatment is better suited to the cases of the chronic than of the acute seasonal type.

The second question could clearly only be answered by animal experiment, and I am indebted to Prof. C. E. Walker for his advice and help in experiments on rabbits in the histology department in the University of Liverpool. Phenol was applied to the nasal and also to the tracheal mucosa, and the animals were killed and examined after varying intervals. The results are precisely what one would expect. For one or two weeks the mucosa is covered by tough coagulum. The submucosa shows vascular engorgement and round-cell infiltration. After a time resolution occurs. Nevertheless in certain minute areas necrosis has extended to the basement membrane, and so continuity can only be restored by scar tissue. Of course the technical difficulties of applying the acid to the delicate tracheal mucosa via a miniature bronchoscope were formidable. It is not unfair to assume that the more robust and accessible human mucosa would come to no harm from this application in careful hands. Certainly it will compare favourably in that respect with other forms of treatment.

¹McMahon, B. J.: Ann. of Otol., Rhin., and Laryng., 1934, xliii., 643.

²Chandler, G. F.: Med. Jour. and Rec., 1932, cxxxvi., 337.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF PSYCHIATRY

At a meeting of this section on Oct. 8th Dr. H. J. NORMAN gave his presidential address on

Psychiatric Digressions

Laying stress on such matters as personal predilection dictated or as seemed to require discussion.

The strict meaning of psychiatry, he continued, was "the treatment of mental disease," but the word had come to have wider implications and is used synonymously with psychological medicine. It was the section of medicine which dealt with the causes, symptomatology, course, and treatment of mental disorders. Even this did not give a clear indication of what the subject embraces or of what led up to an adequate comprehension of it. Preliminary to it there was the study of psychology and indeed of philosophy. The neglect of the study of these had often been regretted; it would have been still more regrettable but for the fact that so much of it was a waste of time, arid, and unfruitful. With the growth of knowledge, however, there had he thought been a gradual change in this respect, and it was to be hoped that there would soon be a more or less general consensus of opinion on the essentials which the students should acquire. Prophylaxis was of great importance. It had long been apparent that of the causative factors of mental disorder the one of pre-eminent importance was hereditary predisposition.¹ Even where an exogenous factor—e.g., alcohol—appeared to be predominant it was nevertheless often only an exciting one. This aspect of the matter was, therefore, one of eugenics.

PROPHYLAXIS AND TREATMENT

Unfortunately, however, when it was suggested that manifest psychotics or defectives should not be allowed to breed, many loud cries of dissent were heard. It was true that this predisposition was negative in character but the same thing might be said of many diseases. It was the lowering of resistance which was important there also; and if resistance could be increased by any means—for example, in the common cold or in phthisis—the pathogenic factor might be successfully resisted. So, perchance, with the psychoses. It might be taken for granted that psychotic people would continue to be born. The realisation that there was a predisposition was of value because it might be possible to arrange that the individual would so order his life as to avoid those factors which are fraught with greater danger to him than to someone more stable. The nervous child might be guarded against overwork and insomnia when he worried unduly over school routine. In recurrent cases the attacks might be minimised or shortened. Some day there would perhaps be more legal restrictions upon the chronic alcoholic so that he might be prevented from drinking himself into dementia and his family to destitution. Treatment was of course the culmination of their efforts and of their investigations; but this itself was dependent on diagnosis,

on the recognition as far as possible of the ætiological factors, on the existence of adequate facilities, and on the willingness of the patient to undergo or of his friends to consent to what was requisite.

Undoubtedly much improvement had taken place; but there had not been a coincident variation in the recovery-rate. It was hardly fair to blame the mental hospitals for this—while they were still apt to be regarded as a last resort to which patients were sent when everything else had failed. Even in reaching such a conclusion as this it was only just to consider the results of treatment in general medicine and in surgery. There were many chronic diseases in which treatment could only be palliative; but these diseases were not, in many instances, so socially disabling as were the psychoses, or they were more fatal. A point to be remembered also was that statistics as to cures—or of failures—were more readily accessible in regard to mental hospitals; so the critics had their materials more ready to hand. General hospitals were as a rule more fortunate in this respect; and it was but human to lay stress on the successes and to minimise the failures. It would be a great comfort in medicine if it was known in even a good proportion of successful cases how actually the cure was effected. In the gradual emergence of medicine from an art into a science it might be hoped that the *post hoc* fallacy would become a thing of the past and that it would be possible to add *propter hoc* with complete veracity—though not, doubtless, with greater assurance! The treatment of general paralysis might legitimately inspire hope not only so far as that condition was concerned but in some others which had so far proved refractory. For example, it might be possible some day to readjust the balance—glandular, perchance—in manic-depressive disorders, or to discern what was the actual degenerative change in the schizophrenic group.

Dr. Norman then discussed the relative importance of psychology and of the philosophic aspect in general. The decision to which of the philosophic schools with their varying, often contradictory, opinions one gave allegiance seemed for the most part to be a matter of temperament. His own leanings were towards empiricism, which had been defined in the "Encyclopædia Britannica" as "the theory that all knowledge is derived from sense experience. It is opposed to all forms of intuitionism, and holds that the mind is originally an absolute blank (*tabula rasa*), on which, as it were, sense-given impressions are mechanically recorded, without any action on the part of the mind." He discussed at some length the grounds on which this philosophy was based and concluded that given the conditioned reflex and all the inferences made possible thereby, a cerebral mechanism could be constructed which was surely adequate for all the intellectual products of a Shakespeare, a Goethe, a Dante, or even of a Bernard Shaw. In the same way that the process of evolution demonstrates the gradual building up, so did the devolutionary changes show the absolute dependence of mind upon organic structures. Day by day they had to watch the fearsome experiments which nature performed on suffering humanity. These demonstrated only too clearly the gradual and final moral, intellectual, and emotional degradation which occurred if the process was not checked. Other lines of study had their own importance—for example, the application

¹ Dr. J. C. Prichard was quoted by Samuel Tuke in his introduction to Jacob's On Hospitals for the Insane as long ago as 1811 as saying: "Mental derangement, considered generally, or with respect to the aggregate number of cases, may be looked upon rather as a congenital imperfection, than as a disease resulting from external impressions."

of our knowledge of mental disorders to biography and history; to the borderland of insanity where the maddoids, the eccentrics, some of the sexual perverts, and a good many criminals were to be found, and on the outskirts of which the more fanatical devotees of strange cults existed; to the question of the neuropathic constitution of so many men of genius; to the social aspect and the influence of the neuropath in bringing about revolutions and wars; and in endeavouring to counteract the misconceptions which still exist among the public with regard to insanity so that more reasoned, more dispassionate views may prevail. He dealt fully with some of these aspects, notably with popular misconceptions or fallacies regarding mental disorders, in the past and in the present. It would be idle to maintain that there was not room for improvement in mental hospitals, but there were no reasonable grounds for the sweeping accusations that continued to be made. These were unjust to those who had charge of the patients and distressing to relatives and friends. It was not the good faith of the critics but their knowledge which was at fault, and this led to exaggeration and distortion in their statements.

PROBLEMS OF DETENTION

Conditions in asylums in the past were certainly bad. The testimony of reliable persons made that clear, as did also the official reports of the time. But many of the writers who described them were romancers who saw to it that their tales lost nothing in the telling, and because they were by nature imaginative, could hardly avoid distortion and misrepresentation. In addition they might have, perhaps unwittingly, allowed themselves to give undue weight to tainted evidence, especially with regard to the matter of illegal detention. The speaker admitted that after hearing some of the testimony in the law courts he would at times prefer to accept that of the patient—even of the certified one. But there were those whose preference was for the allegations of the insane, or, at the least, of the half-mad, if their statements are adverse; and these same persons would be justifiably annoyed if such allegations were accepted against themselves in a court of law.

Dr. Norman quoted some comments on "the horrors of certification" and "the scandal of the Urgency Order" from the modern daily press. He was not concerned to discuss specifically such allegations—though that would be an easy matter—but with the general tone and the attitude which they typified. It was all so simple to these self-appointed critics. Lacking practical knowledge of what it meant to have to deal, day in, day out, with the mentally disordered, they could not begin to appreciate the difficult problems which had to be faced. For example, when could constant and vigilant supervision be relaxed in the case of the suicidal patient; when should he be allowed out alone on parole; or at what stage in his progress towards recovery was it advisable to suggest that a patient should be discharged from certificates? Again, what was to be done with the voluntary patient who gave notice of his intention to leave and of whom it was felt that he might become a danger to himself or to others. A patient might be plausible, lucid, and might argue rationally—his premises being granted—and yet might attack his companions like a fury when released from control. There was also the person who had recovered sufficiently to be discharged but had never realised adequately that he has had an attack of mental disorder. His cloudy recollection might be of the struggles associated with

such things as feeding, bathing, and indeed with many events in which his negativism had been overcome only by considerable effort. This, which was a matter of daily experience to nurses, was understood by few besides them. There was, too, the patient who always had a grudge and a grievance, who moved from one hospital to another, but was always disgruntled. It is not in mental hospitals alone that this type was to be found; every boarding-house and hotel knew it.

Such patients formed, fortunately, a very small percentage of the total, but there seemed every likelihood, however, of that proportion being maintained. It had to be remembered that the most difficult, troublesome, exigent, and querulous individuals in the community were relegated to the mental hospitals—frequently after they have exhausted the patience of their relatives and also when they had already been subjected to treatment elsewhere. The lay press exercised great power and influence, for the most part wisely and honourably. Dr. Norman pleaded, therefore, for a wiser discretion in the attitude which editors adopt in these matters and a more careful sifting of the evidence presented to them, otherwise they might do more harm than good. By inspiring fear of mental hospitals in patients and friends, they might cause delay in patients being placed under care, and they added to the anxieties—already great in many cases—of the relatives.

Dr. Norman quoted extracts from various sources, including the Report of the Royal Commission on Lunacy and Mental Disorder (1926), as evidence that there is no foundation to justify allegations of improper detention or ill-usage in mental hospitals to-day, and from an article of his own published 22 years ago entitled "The Brighter Side of Mental Hospital Life" to show that the mental hospital is not a gloomy place. One fact noted by Dr. Donald Gregg (1932) which had always appealed to him (he had very often used it for the encouragement of patients) was that in the majority of cases unhappiness was a symptom of favourable prognostic value. It was still held by many that a patient's mental condition was made worse, or even that insanity is caused, by association with other patients; and it was even said that members of the staff of a mental hospital were influenced in some sinister way and became "mental cases." If they did, the numbers were not disproportionate to the incidence in other occupations, and even if insanity did occur frequently in these staffs a reason might be sought, not in "communicated" insanity, but in the arduous and worrying nature of the work. Actually it would appear to be a difficult matter to cause a psychotic condition. It was quite a common experience even nowadays to have to discuss this aspect of the matter with relatives—even with doctors—who regarded it as not only a possibility but, indeed, as a probability. Just about a hundred years ago an enlightened alienist, Dr. Jacobi of Siegburg, affirmed "that among six hundred cases he had never witnessed one in which the patient sustained any material injury from his residence in the establishment . . . or from any influence exercised upon him by the other patients." From a more considerable experience Dr. Norman could confirm Dr. Jacobi's conclusions. The contrary might indeed be asserted with considerable confidence, possibly because man was a gregarious animal. Even melancholics sometimes profited by an awakening of interests other than in their own morbid state, and the introspective type which may well be described as the "malade imaginaire" might also benefit therefrom.

HISTORICAL APPLICATION

It would be found, Dr. Norman went on to say, that the application of psychiatric methods to the study of biography and of history had a more than academic interest. History might not repeat itself; but the course of events might nevertheless be predicated with some confidence if the constitution and the circumstances of an individual were known.

The manic-depressive, the melancholic, the paranoiac, the alcoholic, the epileptic, may possibly bring much trouble to themselves or cause it to others when they have freedom of action or when they are encouraged to give rein to their morbid proclivities. It is bad enough when they are merely subjects; but magnify their opportunities by giving them unlimited power and the results may be disastrous. Not always so, however, for, as we see the patient in a hypo-manic phase writing or talking brilliantly, or carrying through business transactions, so we read of the amazing careers of kings, conquerors, great statesmen and dictators, who lived on the borderline of insanity or who actually were at times mentally disordered, but, who were able, for the most part, to do great and successful work: Alexander the Great, looking for fresh worlds to conquer and dying of alcoholic excess after having "emptied ten times the goblet of Hercules," Julius Cæsar, Richelieu, Napoleon, Peter the Great, Charles V., Frederick the Great, Clive, who twice attempted his life in his early years and eventually committed suicide at the age of 49. But consider the other side of the picture and contemplate the careers of Nero, of Heliogabalus, of Ivan the Terrible, of Jean Paul Marat, King George III. suffered from manic-depressive insanity and Pitt (Earl of Chatham) had recurrent attacks of mental disorder; what influence did this have on our foreign policy, remembering that it was the epoch when we lost the American Colonies? Wars, "holy" as well as other kinds, have been brought about or incited by fanatics playing on the emotions of the populace. When we look abroad in the world we can still appreciate how applicable is the saying of Dr. Johnson—"As a madman is apt to think himself grown suddenly great, so he that grows suddenly great is apt to borrow a little from the madman." There are at the present time individuals holding prominent positions and influencing the destinies of countries, who are known to be unstable mentally or who have actually had attacks of mental disorder. We know that after recovery from an attack, or in intervals between the disordered phases, a person can be as capable as ever; but it seems an undue risk, for the individual and for the State, to place too great a responsibility, with all its anxieties and worries, upon the shoulders of such a one.

Bearing these facts in mind, is it unreasonable to hope that there may be safeguards so that they shall not occur in the future? Will it ever be possible to limit the scope of action of such individuals, especially if they are known to be unstable? It seems an idle dream so long as we cannot set our houses in order in philosophy, in religion, in art, in politics, or in medicine. Always contest and controversy—so that we have to save our conscience by saying that war is necessary, even beneficial, and making our motto not charity and long-suffering but "I come not to send peace, but a sword," or "War is a terrible trade; but in the cause that is righteous, sweet is the smell of powder."

Instead of man considering himself as so wonderful "a piece of work" it might be better if he were trained more along materialistic lines; and rather than say, half-heartedly, that he is a miserable sinner—which only the melancholics really believe themselves to be—admit that the human mechanism is a fallible and delicate one which a fever, some glandular change, disorder in the cerebral circulation, can throw out of gear; and that if "great wits are sure to madness near allied," the small ones also are only divided from it by "thin partitions."

Indeed it is "a mad world, my Masters." Apropos— one of my patients recently handed me a cutting from the *Times* with this passage underlined—"As I look at the world of 1935 it seems to me to have gone mad, or, as an alternative, that I must have gone mad myself." It looks as if there may be a great future for psychiatry!

In this connexion there is an interesting movement initiated by the Netherlands Medical Association under the title of the Committee for War-prophylaxis. In a communication which I have received on the subject the following passage occurs—"The psychiatrists should try to strength the opposition against war, . . . Besides the activity which each of them may develop by himself or together with his colleagues within his own country, the psychiatrists can, by international co-operation, attempt to bring the nations and their leaders to a realisation of fact; they can enlighten them on the psychic mechanisms which cause war."

This may at the present time, Dr. Norman concluded, seem rather a forlorn hope, but it is one with which I gladly associate myself and to which, I trust, many will give their benison.

INSTITUTE OF MEDICAL PSYCHOLOGY

Prof. C. G. JUNG visited the institute last week to give five seminars on

Fundamental Psychological Conceptions

His first lecture dealt with his view of the structure of the mind: the nature of consciousness and unconsciousness and the ecto- and endopsychical functions. He said that the four ectopsychical functions consist of sensation, feeling, thinking, and intuition, and the endopsychical functions consist of memory, the subjective components of conscious functions, the affects, and the invasions. The ectopsychical functions he has dealt with in great detail in his "Psychological Types"; the endopsychical are not so familiar. He explained memory as the function that links a man up with the things that have faded out of consciousness, that have become subliminal or repressed. The subjective components of conscious functions determine the instinctive reactions of a person to other persons or situations; they are the emotional contents that play such an important part in projection and transference. The affects are not really functions but events, emotions that possess the man and of which he may control the expression but not the existence. In invasion the unconscious has full control: it can break into the conscious condition and the man is then beside himself and not responsible for his behaviour.

The discussion brought out some interesting distinctions between emotions and feelings, principally the fact that emotions have a definite physiological counterpart—the flush of anger, the heightened pulse-rate, or the psycho-galvanometric response. Prof. Jung also developed his view that feeling is a rational function, a view which is perhaps peculiarly difficult for Englishmen to appreciate. It is, he says, the function by which we assign values to things; it is quite independent of thinking and may be antagonistic to it. Just as there may be abstract thinking, so there can be abstract feeling: values may be as abstract as ideas. A man may adapt himself to life by means of either one of these functions, but never by both equally; one of them will always be inferior, relatively undifferentiated, and ultimately uncontrolled.

At the beginning of the second evening Prof. Jung began to deal with the structure of those depths of the unconscious mind which lie below the personal unconscious, or subconscious. The contents of the "collective unconscious" are mythological, archaic, archetypes which are common to mankind in general. An uneducated negro in the Southern States will dream of a man crucified on a wheel, the Ixion of Greek legend, the ancient sacrifice to the sun-god,

A schizophrenic patient will have a vision which, stage by stage and even word by word, is identical with the account of another vision in an Egyptian papyrus. This is Prof. Jung's chief interest, and he has performed an enormous amount of research, with the assistance of expert philologists and archaeologists, into the myths of such widely separated civilisations as the ancient Greek, Babylonian, Chinese, and Aztec, and into the legends and religious beliefs of many uncivilised peoples such as the Pueblo Indians of Mexico and the Bantu tribes of East Africa. The rest of the second lecture was chiefly devoted to an exposition of the word association test as Prof. Jung uses it both in private practice and—strange procedure to English minds—to determine the guilt or innocence of persons accused of crime.

DREAM ANALYSIS

In the third lecture, on dream analysis, he managed to compress into his comments on a consecutive series of dreams by one patient a whole text-book on the practical use of dreams in psychotherapy. His first rule is common to all diagnosis: that prejudice is fatal. When a patient relates a dream the doctor must put aside all that he knows about the patient or the art of dream interpretation in order to deal with an entirely new problem. Only by finding out what each symbol means to the patient can he venture to attribute a meaning to the dream. Therefore he handles it as if it were a Greek or Sanskrit text and applies ordinary philological methods. The dream, he says, does not conceal; merely, people do not understand it. Just as the philologist, applying the principles of amplification, seeks the parallel application of an unknown word in other texts, so Prof. Jung inquires from the patient what the symbols of the dream mean to him. A patient dreams of water: he may associate it with greenness, with H_2O , or with suicide. In any event, his association will indicate the "tissue" in which the word or picture is embedded. Secondly, Prof. Jung insists that every dream has a history before it and will have a history after it; it is part of a continuous tissue, a long film, and one dream is a single observation through the time-slit. Nevertheless, there is, he says, a particular class of dream which the analyst may venture to interpret without knowledge of the patient's personal associations, simply because the dream is impersonal: it comes from the collective or impersonal unconscious which is common to all mankind and therefore all mankind are qualified to interpret it, because they will attach the same meaning to its symbols. Such dreams are called by savages "great dreams," as opposed to ordinary dreams, about which savages feel much the same indifference as do materially minded civilised people. These "great dreams" have a peculiar compulsive quality of their own; this quality not only imposes itself upon the patient but also upon the physician and upon anybody else who hears of the dream. Its symbols are archetypes of mythology—serpents, wells, daggers, bowls, monstrous animals, heroes.

Prof. Jung is developing the theory that these mythological dreams are related to the organic structure of the body. He has certain reasons for thinking that the serpent often represents the cerebro-spinal system, especially the medulla and spinal cord. The crab, being invertebrate, represents chiefly the abdominal sympathetic and parasympathetic systems. He proceeded to develop the theme, relating the dream of a young man which depicted a dark chamber containing a well, below the cathedral in the city of Toledo; the chamber was inhabited by a serpent and

contained a dagger. These symbols he said, can be paralleled in practically every repository of legend and stand for the task which every man has to descend into and subdue his inherited and parental components.

TRANSFERENCE

He was not, unfortunately, able to complete his analysis of this dream, and it will probably long remain for many of his hearers a teasing, unsolved riddle. In response to urgent requests, he decided to substitute a lecture on transference and its treatment, which was a most practical piece of instruction. The problem of transference is inseparable from psychotherapy; Prof. Jung gave his audience a rare insight into it. He defined it as a special case of projection; whereas projection may carry over subjective contents into an inanimate object, transference is a projection on another person. Like any projection, it is involuntary—"You find it." The emotional contents that are projected have a compulsory influence upon the subject, for the emotion is not detachable from him. There is a link, an elastic string, which no will-power can break. Even if the doctor is entirely detached from the patient's emotional processes, the transference must have a certain effect; it is his duty to some extent to accept and mirror the transference. This is why Prof. Jung always sits in front of his patients and talks to them as to normal human beings, reacting humanly to their emotions. When the patient's projection is identical with contents in the doctor's mind which he also projects, there is a counter-transference and the end of the analysis is usually disaster. This is why analysts ought to be analysed, even as the Pope has a father confessor, so that there will be no blind spots in their minds through which a patient—the most cunning of beings—can take possession of their unconscious emotions and cause what Prof. Jung calls personal contamination through mutual unconsciousness.

Transference, according to Prof. Jung, is not by any means exclusively erotic, he says: all activated contents of the unconscious that can be projected on to a person may be the contents of transference. The intensity of the transference relationship is always equivalent to the importance of its content to the subject, and if he can overcome it, the amount of energy that has been wasted in the projection is available for useful conscious activity. Transference is by no means love; on the contrary, it is a misuse of love. It may be set up at first sight, but is usually only established through analysis. It is then often caused through a difficulty of emotional relationship between the doctor and the patient. If they cannot get on together as human beings, then spurious and compulsive feeling comes in as a compensatory mechanism, an attempt of the unconscious to bridge the gap on a lower level. It is a measure of lack of sympathy, not of the strength of it. The worst transferences occur in patients who are shut up in themselves and resist human relationships.

When a transference is in existence, the doctor will often be warned by a compensatory dream or phantasy that he is taking a false attitude towards his patient. Prof. Jung stressed the interesting and unusual view that transference is by no means a necessary or even a desirable part of analysis, but an epiphenomenon which is nothing but a hindrance and should not exist, which should if possible be avoided, and which at best serves only as a warning that things ought to be better managed. Incidentally, Prof. Jung in this lecture made a vigorous defence of his absorption with mythology. He declared

that he would never have worked out the meaning of mythological symbolism if he had not been terribly pestered with transference. His endeavour to solve it, he said, took him into this field of research, and he has already been able to gain knowledge of incalculable value to every practising psychotherapist.

ACTIVE IMAGINATION

Prof. Jung had intended to devote the fifth seminar to the subject of active imagination, but as he decided to interpolate the lecture on transference, he could only find time for a short survey of the subject in answer to a question. Active imagination, he explained, is a method of investigation which cannot be carried out by all patients, but which in those specially gifted is a much more powerful, controllable, and creative method of investigating psychic contents than word association or even dream analysis. It is

a process of direct fantasy by which the patient can enter, actively and not passively, into his unconscious mind. The key which unlocks the door is probably different for each patient, and may require careful search. Some patients enter by means of drawing or painting symbolical pictures; others by means of descriptive writing; others may look at a picture and discover that they are part of it and are following a road, as did Alice through the Looking-glass, that leads through it into unportrayed country. The process is essentially creative whatever form it takes and has nothing to do with passive day-dreaming. Its results are often intensely interesting and valuable to the patient. The activity affords an almost immediate sublimation of the energy which has hitherto expressed itself in neurotic symptoms, and the patient has a good prospect of a rich reward in self-development and integration.

REVIEWS AND NOTICES OF BOOKS

Bacteria in Relation to the Milk Supply

By C. H. CHALMERS, B.Sc., N.D.A., the University, Leeds. London: Edward Arnold and Co. 1935. Pp. 192. 6s.

THE author has incorporated into small space most of the essential information concerned with the bacteriology of raw and heated milk. The routine bacteriological examination of milk and water, including the object of such examinations, the description of various technical procedures, the advantages and disadvantages of the different methods noted, and the interpretation of results are clearly explained. Taints and abnormal conditions in milk, the isolation and identification of organisms from milk, and the control of the dairy plant are then discussed, and in the remainder of the book the general methods of bacteriological technique are described; these include the preparation of culture media used in dairy bacteriology and the use of stains and microscopes. The Ministry of Health milk standards are also noted.

The book is so arranged as to be of considerable assistance to the trained bacteriologist suddenly faced with dairy bacteriological problems, whilst the untrained laboratory worker, the dairy worker, and the farmer can all gain practical guidance in their own particular fields. The chapter on taints and abnormal conditions includes a description of the contaminants of milk, the manner in which they may alter the milk, the identification of such organisms, their usual source, and method of avoidance. Without going too deeply into the realms of determinative bacteriology, sufficient information is given to enable a tentative identification to be carried out, following which recourse can be made to the appropriate literature. The condensation of this hitherto scattered information into a single chapter is of particular value to those concerned with the bacteriology of dairying.

Mr. Chalmers has performed an extremely useful service in thus assembling all the essential information regarding the bacteriology of milk. The book is attractively set out and well printed, and the illustrations are clearly reproduced.

Science and Religion

By N. BISHOP HARMAN, M.A., M.B., B.Ch. Cantab., F.R.C.S. London: George Allen and Unwin Ltd. 1935. Pp. 175. 5s.

Mr. Bishop Harman, adding another to the many books which have been written on the relations of

science and religion, finds no difficulty in their harmonious coöperation in the satisfaction of a man's soul. A religious man takes pleasure in contemplating the goodness of God and likes when he is by himself to let his mind range round mysteries which are at the moment beyond him, but which he hopes may come within his comprehension. A scientific man delights in the order of nature and lets his imagination run on what is just round the corner rather than what is in sight. One is much the same as the other, and a scientific man is driven to be religious more certainly than a religious man is attracted to science. To neither is dogmatic theology essential or material. We doubt whether the thesis that "religion promises its disciples certain boons" could be maintained as a general proposition, and we wonder who is the "James Hinton" of p. 127 who wrote a book entitled "The Mystery of Pain."

The subject discussed in this book maintains its interest for many people in whose youth the conflict between religion and science was a live issue, and it is to them rather than to the younger generation that it will make an appeal.

The Nervous Patient

By CHARLES PHILLIPS EMERSON, M.D., Research Professor of Medicine, Indiana University, Indianapolis. London and Philadelphia: J. B. Lippincott Company. 1935. Pp. 453. 18s.

THIS useful work has the advantages and disadvantages of having been written, not by a psychiatrist, but by a physician interested in the psychological aspect of his patients' illnesses. Dr. Emerson, after 20 years as professor of internal medicine, has come to the conclusion that none but the internist can "evaluate those elements which the patient's disturbed personality injects into the clinical pictures of organic diseases; he alone can recognise those almost exact imitations of these same organic diseases which have their origin in the emotional life of the patient." But for much of his knowledge of neurotic mechanisms and ways of dealing with them Prof. Emerson seems to be dependent more on the literature of psychiatry than on a large personal experience. His best chapters are those in which he gives straightforward accounts of the symptoms, diagnosis, and treatment of physical diseases, accompanied by reminders and discussions of the psychological factors that may affect the system in question. There is a falling off in the second half of the book,

which deals with disorders of sleep and sex, the development of personality, and the varieties of mental disorder. It is, however, clear that Prof. Emerson has not aimed at any profound study of the topics covered, but rather at a mildly critical survey that would be of use in practice. The book as a whole is a sensible and trustworthy guide for the general practitioner who desires to pay regard to an often overlooked but very important part of all illness and treatment.

Cunningham's Manual of Practical Anatomy

Ninth edition. Revised by J. C. BRASH, Professor of Anatomy, University of Edinburgh; and E. B. JAMIESON, Lecturer on Anatomy in the University. London: Humphrey Milford, Oxford University Press. 1935. Three vols. Pp. 1467. 12s. 6d. per vol.

It is a pleasure to see a new edition of "small Cunningham," and to see in it the terminology now definitely adopted by the Anatomical Society of Great Britain and Ireland. The original author passed it through its first four editions, after which Prof. Arthur Robinson carried it on for nearly a quarter of a century. This is the first issue under the present editors, who may safely lay aside the misgivings of which they speak in their preface. They have produced an excellent work, in which any changes made have been in the direction of guiding the student's mind towards the clinical value and application of his work. The volumes have been reduced in size, although several new figures have been added, and an introductory chapter containing general information and directions for the dissector. The work will easily maintain its premier position.

Modern Methods of Feeding in Infancy and Childhood

Fifth edition. Revised by DONALD PATERSON, B.A., M.D. Edin., F.R.C.P. Lond., Physician for Diseases of Children, Westminster Hospital; Physician, Hospital for Sick Children, Great Ormond-street; and J. FOREST SMITH, F.R.C.P. Lond., Physician, St. Thomas's Hospital. London: Constable and Co., Ltd. 1935. Pp. 213. 7s. 6d.

THIS excellent little volume has now become well recognised as a simple and straightforward handbook of infant feeding. The fifth edition differs little from the fourth, which appeared only last year. Breast-feeding has been placed in the forefront to emphasise its importance, and the section on diarrhoea in the breast-fed infant has been rewritten. Several of the tables have been brought up to date and reset, and reference is made to recent work on nutritional anaemia, the occurrence of undulant fever in this country, and the requisites of a "safe" milk-supply. The book is attractively printed, and is designed to be comprehensible to the intelligent laywoman. It should continue to be popular amongst all those concerned with the rational feeding of infants and children.

Chirurgie de l'œsophage

By RAYMOND GRÉGOIRE, Professeur à la Faculté de Médecine de Paris. Paris: Masson et Cie. 1935. Pp. 179. Fr. 35.

In this book the present position of the surgery of the œsophagus is set forth with clearness and restraint. This is particularly true of the chapter on carcinoma. No exaggerated claims are made for

radiation treatment and it is freely recognised that the problems of operative removal are not yet solved. The few successes which have occurred, whilst they establish the ultimate possibility of the procedure, are regarded as due to a happy combination of circumstances not under the control of the surgeon. Moreover, the author points out that dysphagia is usually a late symptom in the evolution of the disease. No less than seven times has he exposed the thoracic œsophagus with a view to resect a growth, only to find in each case that the extension to surrounding parts was so great as to cause him to abandon his intention. The accounts of other diseases of the œsophagus—diverticulum, peptic ulcer, and cardiac achalasia—are extremely good and the sources of information are given in admirable bibliographies. The relation of the sympathetic to cardio-spasm is not mentioned, but admittedly this new surgery is not yet sufficiently established for any reliable deductions to be made.

Clinical Atlas of Blood Diseases

Third edition. By A. PINER, M.D., M.R.C.P., Assistant Physician, St. Mary's Hospital for Women and Children; Physician, St. Pancras Dispensary; and STANLEY WYARD, M.D., M.R.C.P., Physician, the Cancer Hospital, and Princess Beatrice Hospital. London: J. and A. Churchill Ltd. 1935. Pp. 110. 12s. 6d.

A THIRD edition of this clinical atlas suggests that the book is appreciated by students and practitioners. As the authors state in their preface "the progress of hæmatology since the publication of the last edition has been in the direction of clinical rather than morphological elaboration. For this reason no new plates have been added, but the whole of the text has been revised." In the course of the revision, however, no mention is made of the important work done both in this country and in America on erythroblastosis foetalis, showing the probable relationship between icterus gravis neonatorum, hydrops foetalis, and anaemia of the new-born. An account of the extremely characteristic Donath Landsteiner reaction in paroxysmal hæmoglobinuria might be of more help in the diagnosis of this condition than a coloured print of the blood film, which is in no way peculiar. The section on abnormalities affecting the white cells contains an account of agranulocytosis and mention is made of monocytic leukemia. The glossary has been brought up to date by the inclusion of such terms as achrestic anaemia. J. R. Ford's illustrations are beautiful and accurate.

Crook Frightfulness

By A Victim. Birmingham: Moody Brothers. 1935. Pp. 196. 7s. 6d.

THIS painful narrative is an account of the persecution to which its author believes himself to have been subjected since 1922 by powerful and ubiquitous enemies. He tells his story vividly and is passionately convinced of its truth. Few such detailed first-hand accounts as this have been published. Much of the book is taken up with repetition of the insults and mysterious interference which the author noticed wherever he went, so that he was driven, as he says, "around the circuit of the globe in my efforts to escape." Although the narrative appears to have been edited, it is an interesting document, especially for the psychiatrist.

THE LANCET

LONDON: SATURDAY, OCTOBER 12, 1935

HEALTH AND DISEASE ON PAPER

WHEN it comes to the preservation of his own health and happiness is the doctor in a better position than the ignorant layman? In an ideal society would everybody go through the whole medical curriculum so as to have a fair working knowledge of health and disease as they affect himself and his friends? Or if not, would the Utopians be content with teaching everyone elementary biology, first aid, and home nursing? The question seems fanciful, but the medical profession may reasonably be expected to hold considered views on *What Every Intelligent Layman Ought to Know*. Sir HENRY BRACKENBURY has lately acted on some of his own opinions by producing a book, "Patient and Doctor,"¹ which is primarily an attempt to make its non-medical readers coöperate more usefully with their advisers. His object is not so much to sow the seeds of medical wisdom as to make the ground receptive for such seeds as practitioners may later see fit to scatter. Dr. HARRY ROBERTS on the other hand has been far more ambitious. He believes that the ideal layman would know a great deal about his body and mind long before the doctor's car was heard coming up the drive; and the scope of his "Everyman in Health and in Sickness"² is such that it may be said not only to prepare the ground but also to sow a good representative collection of seeds and show the reader how to do the reaping. One critic may say that if all this is to be bought for 12s. 6d. there will be nothing left for the doctor to do except to bless the crops and attend the harvest festival. Another will point out that neither farming nor medicine can be learnt out of books, and that the chief effect will be to make the layman more uncomfortable about himself and his affairs and more prone to take his troubles (complicated by a little knowledge) to the expert. Whichever is right we believe Dr. ROBERTS should have credit for attempting such an immense task and for partial success on an important scale. To be fair the critic should say to himself: If I do not like this book what sort of book (if any) would I have tried to write myself? What in fact should the intelligent layman know, and how, under the circumstances of the present day, should he get to know it?

Our own attitude towards "health education" was declared some years ago in a leading article³ which quoted respectfully some very pungent

sayings by certain leaders of the profession but added: "Is it true that medicine has nothing to offer the public beyond St. Paul's counsel of temperance? Faced with the distresses of modern society, must we remain silent about fresh air, fresh food, and flies? . . . Must we really leave the slums to their unconscious health for fear a little enlightenment may make them over-anxious?" Dr. ROBERTS and his unnamed collaborators have done much more than write about air, food, and flies—so much more, indeed, that they offer great scope for disagreement as well as for praise. In our opinion their book would be better if it were not so long and comprehensive, and though the careful reader will feel admiration for so lucid an account of human natural history he will like some parts much better than others. In describing the anatomy and physiology of man a lavish use is made of technical terms, and there are several sections of the book—notably one on metabolism and food utilisation—whose perusal ought to bring the reader up to M.B. standard at least. "We must now see," says the author cheerfully, "how the body deals with the amino-acids which it absorbs from the digestion of protein." But the average reader is not going to admit a necessity so painful, and he will certainly do better to browse quietly in the chapters on the mind, on the upbringing of children, on birth control, on danger signals, and on nursing the sick. Unfortunately, being human, he may find himself under a morbid compulsion to read also about the endocrine system and its disorders or about the other diseases described at greater or less length in the later part of the work. There are a few statements in these sections to which we may take exception: for example, is it true to say that hare-lip is hereditary; that tuberculous meningitis is always fatal; that a child with measles is best treated in a fever hospital; that boracic fomentations should be used for boils; or that infantile paralysis is "common" in children of two or three years old? There is also food for needless anxiety in remarks like "migraine is a condition which some think is related to epilepsy." But the fault, if there is one, lies not so much in the framing of an occasional alarming or doubtful sentence as in the whole attempt to tell the public about disease. There are many minor disorders with which everyone should be familiar, and most of them are described very well in Dr. ROBERTS's compilation. But when more serious or incurable illness is in question the patient and his family should learn their facts from the family doctor and not from the book-shelf. According to this view the ordinary home does not require a work of reference containing accounts of disseminated sclerosis, dementia præcox, or auricular fibrillation, and the present work is least attractive where it most closely approaches the old style of popular medical encyclopædia whose motto was "everyman his own doctor." The authors would have done well perhaps to bear in mind more often the (probably spurious) Arab proverb: It is good to speak the truth; but it is better to *know* the truth and speak about date-stones.

¹ Reviewed in THE LANCET, Sept. 28th, pp. 722 and 729.

² Everyman in Health and in Sickness. By Dr. Harry Roberts and Others. London: J. M. Dent and Sons, Ltd. 1935. Pp. 739. 12s. 6d.

³ THE LANCET, 1931, I., 357.

So much for the informative side of the new volume. But that is only one side; for the writers naturally and rightly set out to be persuasive as well as instructive, and their aim—their propagandist aim—is to make their fellows healthier and happier. Propaganda has a bad name; nor do we want (as Sir KINGSLEY WOOD says in his message commending the present Health Week), “a nation of people who are forever thinking about their health.” It is also true, as Lord HORDER has pointed out, that maxims drawn up for guidance in personal hygiene should embody general principles and avoid particulars; “since they go to all and sundry, to the young and to the old, to the fat and to the lean, to the blonde and to the brunette, to the tall and to the short, to the phlegmatic and to the sanguine, to the asthenic and to the sthenic.”⁴ At the same time none of us would lightly surrender the knowledge of ourselves and our maintenance which we have gained from our medical training and experience, and we can only wish Dr. ROBERTS well in his attempt to transfer something of his own knowledge, acquired in a lifetime of general practice, to those who very obviously stand in need of it. We would go further. If there are chapters in his book which would make a very suitable revision course for the student entering his final examination there are also chapters—and many of them—which would be more than useful to the successful student who is shortly to apply his knowledge to practice: they would draw together much that may be stored in his mind but has not achieved unity. Those whose eyes are looking chiefly for occasion to differ will find much that will stand in the way of a proper appreciation of Dr. ROBERTS’s volume—from the photographic illustrations onwards. It does not take long to discover that some of those who write under his editorship hold heterodox views on the dangers of constipation, over-eating, cane-sugar, excessive sleep, and tight collars; rightly or wrongly we may not readily accept the advice to clean the nose with soap and water every time we deal with our face, or to wash the leather band inside our hats at least once weekly. But anyone who takes the trouble to examine the book at all carefully must recognise a fine sane purpose behind it—a purpose often finely executed and capable of working great good. There is much here that the intelligent layman (and his doctor) really ought to know but have never before been told so clearly.

SEPTIC ATMOSPHERES

THE existence of special wards for burns at the Glasgow Royal Infirmary has enabled Dr. ROBERT CRUICKSHANK to carry out a study the results of which are of far-reaching interest.⁵ The main fact which emerges is that within a short time of admission to the ward the majority of burns become infected with hæmolytic streptococci. Septic infection, as Dr. CRUICKSHANK observes, must be regarded as the source of the toxæmia

and fever which appear on the second or third day, and constitutes the principal danger after the initial stages; the idea that the absorption of protein-cleavage products accounts for unfavourable manifestations of this kind is no longer tenable. An observation of less apparent importance but of equal interest is that the proportion of patients with hæmolytic streptococci in their throats rises from 6 per cent. on admission to 25 per cent. during the first week in hospital. If this observation should be confirmed in a study of a larger number of cases it will repay careful consideration. The facts that hæmolytic streptococci could easily be cultivated from the air and dust of the ward, and that tonsillitis and scarlet fever occurred more frequently than in other wards, point in the same direction. There is surely some factor concerned in the spread of infection under these conditions which has not been recognised. A single throat carrier might well, according to our present knowledge, account for the infection of all the large vulnerable surfaces represented by a ward full of burns, or it might be suggested that the spread of this infection is due in part at least to indirect contact. But only increasingly heavy aerial infection can explain the condition of the air itself and the rise in the throat carrier-rate. Unless it is assumed that patients’ throats become infected from their own burns (and the mechanism by which this occurs, if it does, requires elucidation), this loading of the air with streptococci remains unexplained. It has yet to be demonstrated that aerial dispersion could possibly occur from a moist infected surface unconnected with the upper air-passages and innocent of any capacity to form droplets or other air-borne particles, and the mechanism of such dispersion is very difficult even to picture. If the transference of streptococci from person to person is achieved by some unsuspected route or favoured by some unknown factor, this would naturally have some bearing on the problem of puerperal sepsis. There is another field of medicine in which the activities of streptococci are without question remarkably favoured by hospital conditions. It is well known that clean operation sites are particularly liable to septic infection in ear, nose, and throat wards. Here there is no difficulty in explaining everything in terms of aerial spread, the vulnerable operation site becoming in its turn a source of further air-borne infection.

Nevertheless a study of the carrier-rate and of the bacteriology of the air itself in such wards might furnish illuminating data. Is there no method, short of segregation, which will obviate this very serious danger? The air in cinemas and even sometimes in trains is treated in an elaborate way for consumption by healthy people; air can be sterilised and adjusted to whatever conditions of moisture content and temperature may be considered desirable, and by a suitable system the direction of its currents can be controlled. Could not these devices, hitherto utilised chiefly to secure the comfort of theatre-goers and travellers, be applied to ensuring the safety of patients in hospital wards? Even if the physical condition of the air

⁴ *Ibid.*, 1926, II., 793.

⁵ *Jour. Path. and Bact.*, 1935, xli., 347.

were without influence on the survival of bacteria in it, a more rapid rate of exchange than window ventilation can secure, and such control of currents that air infected by one patient cannot simply drift across the beds of others, should greatly diminish risk from this source, and at least secure an atmosphere from which hæmolytic streptococci cannot be grown as readily and regularly as the colon bacillus from sewage.

MEDICINE AND THE WELSH LANGUAGE

At the recent annual meeting of the Association of Welsh Insurance Committees held at Barmouth, Mr. F. LLEWELLYN-JONES, M.P., expressed the view that the peculiar health problems of Wales were not receiving due attention. That these exist is beyond doubt chiefly because of the principality's predominantly rural character, its mountainous and sparsely populated areas, and its small counties of low rateable value, but also because of the high proportion of the people who can or prefer to speak only Welsh. Mr. LLEWELLYN-JONES attributed this alleged neglect to the fact that Wales was really governed in public health matters by the English Ministry of Health, although a Welsh Board of Health existed in name. When the Welsh Insurance Commission was constituted in 1911, they had been given to understand that its business would be to reform the whole of the health services of the principality and consultative committees had been set up to explore the whole field. Their reports, prepared after great deliberation, had been shelved. Welsh insurance committees were not consulted when new regulations were in preparation. Circulars issued from the Welsh Board of Health were mere replicas of those issued by the Ministry in England. Mr. JOHN ROWLAND, chairman of the Welsh Board, who followed him, drew attention to the improvement in health derived from the establishment of the modern health services, emphasising the decline of tuberculosis. Wales is unique in having a centrally administered tuberculosis scheme, all the counties and county boroughs having delegated their functions to the Welsh National Memorial Association. Mr. ROWLAND pointed out that, while the fall in the death-rate from tuberculosis had been less rapid in Wales than in England, it had been greatest in the western counties where it had formerly been exceptionally high. He made passing reference to the difficulty experienced by the Memorial Association in finding suitably qualified medical men and women who could speak the Welsh language and urged his listeners to take an interest in the Welsh National School of Medicine.

While some of Mr. LLEWELLYN-JONES's complaints might equally well be voiced in England and Scotland, there can be no question that knowledge of the Welsh language is an asset to those seeking appointments in Wales. Of a total population amounting to 2,593,332 persons in 1931, 97,932 spoke Welsh only and 811,329 spoke both English and Welsh, of whom, no doubt, many found it easier to express themselves in the

native language. The proportion of monoglot Welsh has fallen from 151 per 1000 in 1901 to 40 in 1931, but the decline in the number speaking both languages, which was noticeable but not so rapid up to 1921, has been arrested. Even among those of ages 15 to 24 years, among whom most of the medical students will be found, a proportion of 315 per 1000 speaking both languages would lead one to anticipate no difficulty in supplying the principality's need for Welsh-speaking officers. It has to be remembered, however, that certain other factors may invalidate this conclusion. The medical school is situated at Cardiff where Welsh is not customarily spoken (only 50 per 1000 in that city speak Welsh), and while Glamorgan has a comparatively large Welsh-speaking population, the proportion is low in the adjacent county of Monmouth and the town of Newport, from which students are also drawn. On the other hand, a large number of students from North Wales, where twice as many speak Welsh as in the South, graduate in Liverpool and other universities, so that a supply of candidates who have this special qualification might be expected from these sources, and in fact some do return to appointments in Wales. Probably the real trouble is that most of the Welsh students find practical difficulty in studying for the post-graduate qualifications required for official posts, and choose to enter private practice for financial reasons. It can readily be understood that local authorities and other statutory bodies, even though they consist almost entirely of Welshmen, find it impossible to make language the governing consideration in deciding appointments. However much they are inclined to favour Welsh-speaking candidates, the efficiency of their services must be their first concern.

ST. GEORGE'S HOSPITAL

A GIFT of an unusual kind has been made to St. George's Hospital, London, in aid of the rebuilding fund. The donor, who remains anonymous, has offered to pay for the preparation of preliminary plans for the new hospital. If these plans are accepted by the rebuilding committee his gift will be increased to cover the architect's fees for the whole work. It is estimated that the rebuilding fund, which now stands at £140,000, will thus benefit to the extent of a further £30,000 at least, and the committee has gratefully accepted the proposal. The new hospital is to be erected on the present site at Hyde Park Corner, and the appeal issued is for £1,000,000—a sum which should allow a margin for allocation to the endowment fund. We understand that the architects will be Messrs. Elcock and Sutcliffe of London.

It is hoped that the new gift will enable the committee to begin rebuilding at a much earlier date than was expected.

ROYAL MANCHESTER CHILDREN'S HOSPITAL.—This hospital, the largest of its kind in the North of England, will have to curtail its work unless there is an immediate response to its centenary appeal for £100,000. Since the appeal was made, four months ago, over £10,000 has been received. There are more than 100,000 attendances yearly at the out-patients' department.

ANNOTATIONS

MISFORTUNE PARTIALLY RELIEVED

THE Royal Medical Benevolent Fund has a good name—not only in the sense of reputation but literally. It is a spacious name, interpreting charity in its better sense. Its practical interpretation is still, however, based on a subscription income nothing like sufficient for the purpose. The annual report shows that last year this income was £11,092: returning economic prosperity and increased effort were reflected in an increase of £1676 over 1933 and in the support of 869 new subscribers. But even so the Fund is very far from adequate to meet the demands made upon it. Altruism apart, its activities are the personal concern of nearly every member of the medical profession; for which of us can feel completely confident of maintaining financial or even physical security for ourselves and our dependents in this kind of world? During 1934 the Fund gave financial help to 670 people to whom disaster was no longer a remote possibility but a dreadful fact. At present their needs can be met only to the extent of an annual grant of £40 to a practitioner and £26 to a dependent, and the support of the whole profession is needed if misfortunes in our ranks are to be relieved with a little more decent generosity. Next year will be the centenary year of the Fund, and the committee have considered carefully the idea of obtaining money by some public appeal, but have rejected it. Members of the profession will no doubt agree with this decision, feeling that we owe a service to our less fortunate colleagues which we cannot ask the public to share. The administrators of the Fund intend to invite all medical practitioners to become annual subscribers before the end of 1936, making this a fitting celebration of the centenary of a great charitable organisation. Meanwhile we may look for a wide response to Sir Thomas Barlow's Christmas appeal appearing in our correspondence columns this week.

PLASMA PROTEINS AND N.P.N. IN RHEUMATISM

In all clinical investigations it is important to choose controls of the same age and social circumstances as the group to be studied. The need for this precaution is well illustrated by a recent analysis of the plasma proteins, non-protein nitrogen (N.P.N.), and sedimentation rate in chronic rheumatic disorders by Dr. Aldred-Brown and Dr. Munro of Bath.¹ They have been able to demonstrate wide variations in the values obtained in (a) a group of healthy young adults, (b) subjects suffering from chronic rheumatic disorders, and (c) non-rheumatic persons whose age and economic stresses resembled the preceding group of chronic rheumatics. The range of values in Group (b) and Group (c) resembled one another fairly closely, but there were considerable differences between Group (a) and Group (b). The investigators suggest therefore that several factors, of which increasing age and economic stress may possibly be two, rather than the rheumatic processes, are at least in part responsible for these differences. Osteo-arthritis was found to show the least deviation from the normal. The mean average of the fibrinogen percentages in spondylitis ankylopoietica and rheumatoid arthritis was high, and also the mean average of the N.P.N. percentages in rheumatoid arthritis. The sedimentation rate was

also higher in patients with the latter condition than in other groups, though it is much increased in all types of arthritis. Aldred-Brown and Munro suggest that the lowness of their globulin and fibrinogen figures compared with those of other observers may possibly be due to the fact that their figures for total protein are lower than those usually recorded. Their figures for non-protein nitrogen are also lower. The significance of the variations in the sedimentation rate are to be discussed in a later paper, which will be in some sort a sequel to one published in our own columns last year.²

ASSOCIATION OF LOCAL GOVERNMENT MEDICAL OFFICERS

SIXTY-FIVE years ago the medical officers employed under the old Poor Law banded themselves into an association to ensure for their members proper remuneration and conditions of service. Six years ago, after the passage of the Local Government Act, the scope of the association was widened to include all medical officers working for municipal authorities, under the comprehensive title of The Local Government Medical Officers' Association of England and Wales. The Association supports the employment of part-time assistance medical officers, as opposed to a whole-time medical service, and is in favour of free choice of doctor in areas where vacancies occur and the local medical profession has approved this form of service. The Association is desirous of letting it be widely known that it will admit as an associate any registered medical practitioner who, without being a local government medical officer, accepts the principle of private practitioners carrying on public assistance medical service either by the part-time salaried method or by the free choice method where so adopted. Such associates pay a fee on joining of 2s. 6d., but not the annual subscription of 10s. At present the officers of the Association are: president, Dr. Alfred Cox; chairman of council, Dr. Percy Spurgin; hon. secretary, Dr. M. W. Renton, The Bridge House, Dartford, Kent.

MULTIPLE MYELOMA

WHEN the extent of involvement of the bone-marrow in multiple myeloma is considered it is a matter for surprise that anaemia is not a more pronounced and characteristic clinical feature of this disease. Possibly it calls for further attention in diagnosis. Thus U. Spiller and A. Revetas³ have recently emphasised the importance of multiple myeloma as a cause of "cryptogenic anaemia." They say that in 12 out of 432 cases of anaemia seen at the Martin Luther Krankenhaus in Berlin since 1931 the cause of the anaemia was obscure, and that 6 of these were later found to be examples of multiple myeloma. Leucopenia with relative lymphocytosis may precede both symptoms and the X ray changes of myeloma. Unfortunately in the 4 cases annotated by these authors the blood picture is not described in detail. In the interesting case published by C. F. Sweigert⁴ examination of the blood revealed a macrocytic anaemia: myelocytes, normoblasts, and on one occasion myeloblasts, he writes, were present. We have here evidently the leucoerythroblastic anaemia of Vaughan and Turnbull. Other interesting features

¹ The Blood Sedimentation Rate and the Plasma Proteins, THE LANCET, 1934, i, 1333.

² Deut. med. Woch., 1935, lxi, 1305.

³ Amer. Jour. Med. Sci., 1935, exc., 245.

⁴ Aldred-Brown, G. R. P., and Munro, J. M. H.: Quart. Jour. Med., 1935, iv., 269.

in this case were the existence of hyperproteinæmia, associated with excretion of Bence-Jones protein, and also clinical evidence of chronic nephritis combined with low blood pressure. The peculiar type of nephritis that is found in multiple myeloma has been neglected both by pathologists and clinicians until recent years. It is therefore of interest that Sweigert says of his case that "multiple myeloma was first suggested by the peculiar blood picture and evidences of an atypical nephritis. Although these are by no means constant or pathognomonic features of the disease their combination should always demand consideration of myeloma." The kidney picture has been further examined by American observers⁶ in a case which came to necropsy at the Johns Hopkins Hospital. The peculiar tubular casts and the foreign body reaction excited by their presence are stressed by these authors as characteristic of the condition, and the nature of the functional disturbance is regarded by them as obstructive in origin. Attempts to reproduce this specific nephritis in dogs, rabbits, and mice by repeated injections of Bence-Jones protein were unsuccessful, but it is possible that the negative results were due to the shortness of the periods over which the injections were carried out.

PROF. JUNG IN LONDON

THE Institute of Medical Psychology is rapidly becoming known as a centre of energetic research and instruction in psychology, both practical and theoretical. The visit of Prof. C. G. Jung to the Institute last week, where he delivered five seminars on "Fundamental Psychological Conceptions," was an important event in its short but increasingly distinguished annals. Prof. Jung's teaching is still too little known in this country. His books deal little with therapy; they are largely devoted to the explanation of the substantial body of knowledge he has helped to build up during the last 30 years on the racial and historical components of the human unconscious mind. This is his main interest but, at the same time, he is a busy practitioner, and those who imagine that he is chiefly concerned with mystical philosophy are profoundly mistaken. Some may have had this view effectively shattered by their experience of him last week. The audience had been limited to about a hundred of the leading psychotherapists of the country, with a sprinkling of medical graduates and university workers. It was, therefore, composed of people well acquainted with his books, and when he spent the first two lectures on a discussion of psychological types and the association test—and even expressed reluctance to answer questions that went deeper—many of them naturally felt that he did not appreciate either the intense interest which English psychotherapists take in his work or the overwhelming difficulties which they have encountered in making contact with him and learning the exact meaning and practical applications of his work. When this unrest had expressed itself in the medical discussion which followed the second seminar, Prof. Jung set himself to meet the need, and the last three lectures were a wealth of good things.

Much as his hearers benefited from listening to Prof. Jung's brilliant account of his explorations into the vast country of the human mind, they must have benefited equally from the intimate contact of five consecutive, intensely active evenings with his personality. They listened to this robust, burly man, with his white hair and moustache, ruddy face,

and general appearance of exuberant health and good spirits, as he lectured in his own inimitable way—sometimes easy-going, sometimes jovial, with bursts of infectious laughter, often vigorous and trenchant, occasionally stern and uncompromising. Prof. Jung not only has material to impart but has the rare gift of knowing very well how to impart it. His privileged audience had a treat which they will not soon forget, and they will look forward eagerly to his next visit.

THE POTATO

A BROCHURE¹ issued by the Potato Marketing Board makes extensive claims for the potato as an article of food, and not one of these claims is without foundation. Compared with the cereals, potatoes owing to their high water content are a less cheap form of energy producer, but they have so many other advantages that it is unfair to make the comparison purely on the basis of energy production. The quality of potato protein is at least equal, if not superior, to that of the cereals, and in vitamin content and salt balance it surpasses them. Potatoes supply vitamin C and the vitamin-B complex, and though their supply of vitamin A as carotene is small, judicious selection and propagation of yellower varieties might be able materially to increase it. Neither pellagra nor beri-beri is recorded in persons subsisting mainly on potatoes, showing that the vitamin-B complex is well supplied. The good vitamin-C content of the potato is perhaps one of its greatest assets. The tubers are capable of storage for many months, throughout which the vitamin-C content is well maintained; for persons on poor and monotonous diets over long winters, the potato must be one of the greatest protective factors. The occurrence of scurvy in Great Britain in the spring of 1917, when the potato supply fell short, witnessed to this. Potatoes yield an alkaline ash and are therefore preferable to cereals in diets where a preponderance of base-forming principles is desired. Some at least of the cereals appear to be actually rachitogenic and antagonistic to normal healthy tooth formation; the potato, it seems, has no such property. Whether this property is due to a toxin or to the presence of a large proportion of the phosphorus in cereals in a non-available form, and even in a form which militates against the absorption of calcium also, is still not quite certain.² The well-known and astonishingly favourable results of the survey of the teeth, made recently among the islanders of Tristan da Cunha, were a striking testimonial for the potato; for it, far more than any cereal, is the staple energy producing food of the island. There seems little doubt that a considerable proportion of the cereal in the diet of most people in Great Britain could be advantageously replaced by potato.

Even if replacement of cereal in the diet by potato may not be easy to achieve, a second publication of the Potato Marketing Board³ shows that simple addition of more potato to the diet is made possible merely by reducing the price. The Board carried out an experiment to ascertain whether lowering of price of a staple foodstuff would increase consumption. Most housewives with a slender house-keeping allowance could presumably have given an answer without needing any experiment to settle the question. It was however desired to obtain an

¹ The Potato as an Article of Diet. By H. K. Archbold. D.Sc. Lond., D.I.C., A.I.C. London: Potato Marketing Board, Africa House, Kingsway, W.C.2. Pp. 20. 6d.

² Bruce, H. M., and Callow, R. K.: *Biochem. Jour.*, 1934, xviii., 517.

³ An Experiment in the Distribution of Potatoes at Bishop Auckland. Pp. 32. 1s.

⁶ Forbus, W. D., Perlzweig, W. A., Parfentjev, I. A., and Barwell, J. C.: *Bull. Johns Hopkins Hosp.*, 1935, lvi., 47.

answer even in the most unlikely conditions, where the price of the foodstuff was already comparatively cheap so that the total reduction in expenditure would only be small. It was also desired to make the experiment where purchasing power was very small. A mining village in the county of Durham was therefore selected as being one where the percentage of those unemployed for continuous long periods was very high. There were 2437 unemployed (insured) male workers, with 3799 dependants, in a population of 5000 insured workers and 19,000 total inhabitants. The experiment was confined to the families of the unemployed and was carried out in February and March. Families containing up to three persons could purchase $1\frac{1}{2}$ stone of potatoes weekly, and larger families proportionately more. Instead of paying $10\frac{1}{2}d.$, the ruling price for this amount, the $1\frac{1}{2}$ stone could be bought for $6d.$, thus saving $4\frac{1}{2}d.$ a week. It was also particularly desired to test how the trade of retailers of potatoes in the area would be affected and the coöperation of the shopkeepers was secured. The full number of vouchers for cheap potatoes was issued and only 7.3 per cent. of these were not used. The normal sales of potatoes in the retail shops fell by 40 per cent., but the total consumption in the whole area rose by 96 per cent. When this figure is corrected for any possible source of error, an increased consumption of 69 per cent. is still shown. The main thesis—that increased consumption will result from lowering the price of an already cheap staple foodstuff, when purchasing power is very small—appears therefore to be proved, as it was scarcely possible to doubt that it would be. But to implement this conclusion is another matter.

MEDICAL STUDENTS ABROAD

ACCORDING to a report¹ by the Council on Medical Education and Hospital it appears that 710 Americans enrolled as medical students in schools outside the United States in the academic year 1930-31. If still studying abroad these students will probably finish their course during this year or next, and it may be expected that most of them plan to return to the United States to practise. It was a consideration of the problem created by this migration that led the Federation of State Medical Boards to harden their hearts against American students matriculating abroad and not to admit them to any licensing examination without producing satisfactory evidence of pre-medical education. The numbers in question are still by no means negligible, for during the last academic year 1934-35 there were known to be 1471 American students training in 97 institutions abroad, and 199 who graduated or completed their medical training during that time. The report contains a caustic remark that of 502 students whose names were supplied to the Association of American Medical Colleges this year 106 had made application to medical schools in the United States without success since 1931, and it is hinted that some of these students have signified their inability to obtain a medical education in the U.S.A. by rejection at 25 different medical schools. Various European countries have, it seems, sent representatives to the U.S.A. to discuss measures for dealing with the students who come over, and it may be interesting to note which European schools at the present time especially are offering hospitality to American students. For the academic year 1934-35 the highest numbers of students were enrolled, in descending

order, at Edinburgh Royal Colleges 190, University of Rome 161, University of Bern 114, University of Basle 83, University of Zurich 72, University of St. Andrews 69, University of Paris 63, Friedrich-Wilhelm University, Berlin, 62. A footnote to the table of figures suggests that the totals of 1471 enrolled and 199 who completed course should be larger, inasmuch as the following schools, viz., Vienna, Bologna, Naples, St. Mungo's, Glasgow, and Geneva, which previously reported large numbers of American students, do not now figure in the list.

SKIN DISINFECTION

USERS of Harrington's solution may be interested to know that its virtues have been rediscovered in the United States. J. A. Vaichulis and Lloyd Arnold, who make no reference to Harrington's solution, have presumably repeated the steps in argument or experiment which led to its formulation, for the skin disinfectant evolved by them¹ contains almost identical amounts of mercuric chloride, hydrochloric acid, and alcohol; it differs in containing also 10 per cent. of acetone and 0.2 per cent. of chrysoidin Y, the former serving to dissolve fat and thus assist penetration, the latter giving characteristic colour and some added disinfectant power. The phenol coefficient of this solution, using *Staphylococcus aureus* as the test organism, was found to be 357. It is cheaper than tincture of iodine and much cheaper than solutions of other mercurial compounds such as mercurochrome or metaphen, and it is said to have been used successfully not only for preparing the skin in 185 cases of operation on the neck or abdomen, but in 300 cases of gunshot wounds and automobile accidents, another matter altogether, since the sterilisation of intact skin and the disinfection of a wound are quite different problems. These claims involve two questions which are in a highly unsatisfactory position. One is the true disinfecting capacity of mercury salts under clinical conditions. Although Geppert exposed the fallacy in Koch's original experiments with mercuric chloride no less than forty-five years ago, numberless papers have continued to appear up to the present day reporting experiments in which inhibitory as distinct from bactericidal action is ignored. The conditions of a test of mercuric chloride can be so arranged as to give almost any result, but the nearer those conditions approach to those obtaining in the body, which is tantamount to saying the richer the medium employed, the less does its disinfecting power appear to be. It is very desirable that a test suitable to the peculiar action of the heavy metals should come into general use. The second question does not arise directly from this paper, since no observations of the kind were made by Vaichulis and Arnold; it concerns the proper method of determining whether or no skin has been disinfected. Various authors have scraped or swabbed treated areas; Tinker and Sutton² excised strips of skin from the edges of operation wounds, and others have cut portions of skin from animals, to furnish material for cultivation. Colebrook's method³ differs from all of these in securing adequate dilution of the inoculum and in furnishing quantitative results. This is admittedly a proceeding not lending itself to exact definition, but a nearer approach to uniformity of method would make it possible (which at present it is not) to compare the results obtained by different experimenters.

¹ Surg., Gyn., and Obst., 1935, lxi., 333.

² Jour. Amer. Med. Assoc., 1926, lxxxvii., 1347.

³ Jour. Obstet. and Gyn. of Brit. Empire, 1933, xi., 966.

¹ Jour. Amer. Med. Assoc., August 31st, 1935, p. 688.

HAROLD WARD DUDLEY, F.R.S.

THE death on Oct. 3rd of Mr. H. W. Dudley, Ph.D., F.R.S., at the early age of 47, removes one of the outstanding research workers in biochemistry as applied to medical problems. As a student at Leeds he came under the influence of J. B. Cohen, one of the first organic chemists in this country to see the promising future that lay before biochemistry. A research scholarship enabled him to spend two years in Berlin working at the structure of purines under Wilhelm Traube in Emil Fischer's laboratory; from there he went to Herter's laboratory in New York where he met H. D. Dakin, another of Cohen's old students, and entered into a fruitful collaboration with him. Most noteworthy perhaps was the discovery of the enzyme glyoxalase, which rapidly converts methyl glyoxal at body temperature to lactic acid. During the late war he was attached to the R.A.M. College in London, and was sent to the United States in charge of an anti-gas mission. On his return to England he joined the staff of the Medical Research Council as chief biochemist, a post that brought him into close contact with colleagues working in many different fields of medical research, to whom he gave freely of his deep knowledge of chemistry and his skill in complex analysis.

The first problem presented to him was that of the chemical nature of the constituents of the posterior lobe of the pituitary body; he was able to show that the pressor constituent and the constituent responsible for causing contraction of uterine muscle were separable by chemical means. He then turned his attention to the newly discovered insulin, and was the first to devise a method of preparation (still used in its manufacture) which gave a dry stable product having ten times the activity of the original crude material, and to suggest that the hormone itself was a complex protein derivative—a conclusion amply confirmed later by other workers. Meanwhile in collaboration with O. Rosenheim and W. W. Starling he proved the constitution of spermine and spermidine, two bases now known to be general tissue constituents for which no physiological function can yet be even suggested. The importance of certain vasodilator constituents of the animal body with a histamine-like action for the normal functioning of the capillaries had long been emphasised by Sir Henry Dale. Dudley, in collaboration with W. V. Thorpe, was able to identify the substance having this action with histamine itself, which was isolated from several organs under conditions which precluded putrefactive changes. Next came a brilliant research with Dale which led to the isolation of acetylcholine from horse and ox spleen. Here Dudley's analytical skill was shown at its best; his method of separating this unstable substance from choline and other substances present by means of their chloroplatinates bears the stamp of genius.

Dudley's last research, which was fortunately brought to a successful conclusion before his untimely death, dealt with the active principle of ergot. It had been assumed that the substances active towards the uterine muscle were the alkaloids ergotamine and ergotamine, but in 1932 Chassard Moir obtained direct evidence that aqueous extracts of ergot free from these complex alkaloids were active when administered by the mouth. The active principle must therefore be different from any of those known hitherto and Dudley undertook a chemical investigation of this unknown substance in association with the direct clinical observations of Moir. The result was the isolation of a new water-soluble alkaloid,

ergometrine, which in minute doses has the characteristic activity of ergot. This discovery of ergometrine, which solves a long-standing problem of the pharmacology of ergot and its use in therapeutics, has aroused widespread interest, as is shown by the fact that it has already been confirmed, in effect, in three other laboratories where research was independently in progress. While his main interests were definitely in the laboratory Dudley did not neglect those other biochemical activities which he was called upon to perform. From 1922-24 he was secretary of the Biochemical Society, and from 1925-30 joint editor with Prof. Harden of the *Biochemical Journal*. He was also for many years an assistant editor of *Chemical Abstracts* and was responsible for the high level of the section of abstracts dealing with biochemistry. His great attainments were recognised in his election to the fellowship of the Royal Society in 1930.

EARLY DIAGNOSIS OF AORTIC SYPHILIS

SYPHILIS of the aorta usually causes death within a few years of its clinical recognition. Affecting most often the ascending portion of the vessel it is liable to damage the mouths of the coronary arteries and the cusps of the aortic valves. If the inflammatory process is confined to the transverse or descending part of the arch, these vital structures escape and the prognosis is much less grave.

There is reason to think that the aortic wall is invaded early in the course of syphilitic infection, and that it is not until the destructive process has been at work for many years that symptoms arise and the diagnosis of aortic syphilis is made. Hence the relatively poor results of treatment. In many diseases subjective symptoms, indicating altered function, precede any detectable alteration in structure. In aortic syphilis, however, it has been suggested that a structural change may be recognised long before symptoms arise. E. P. Maynard and co-workers¹ claim to diagnose such cases radiographically, and they have been able to investigate 346 patients by working in coöperation with a syphilis clinic, and investigating the cardiovascular system of every patient attending it, irrespective of the stage of the disease and the symptoms complained of. All who have studied the X ray appearances of the aorta will appreciate, nevertheless, that the recognition of slight abnormality in the width of this vessel is not easy. The width varies with age and with the shape of the chest, and can be altered by other factors such as atheroma and high blood pressure. The investigators use the method of Vaquez and Bordet for measuring the vessel width, and after excluding cases with high diaphragm, scoliosis, a systolic pressure over 140 mm. Hg, or rheumatic aortic lesions, and patients with arteriosclerosis or over fifty years of age, they accept any measurement over 7 cm. as pathological, and one between 6 and 7 cm. also, if the ascending aorta is prominent. Of 77 patients examined within nine years of infection, 14 had aortic syphilis, but only 4 of these had symptoms referable to the lesion. The proportion with aortitis gradually increased with the period since infection, and so did the proportion of these with symptoms; out of 17 patients examined thirty years or more after infection 15 were found to have cardiovascular syphilis. In the 145 patients who showed evidence of aortic syphilis the mean interval between infection and evidence of

¹ Arch. Internal Med., 1935, lv., 873.

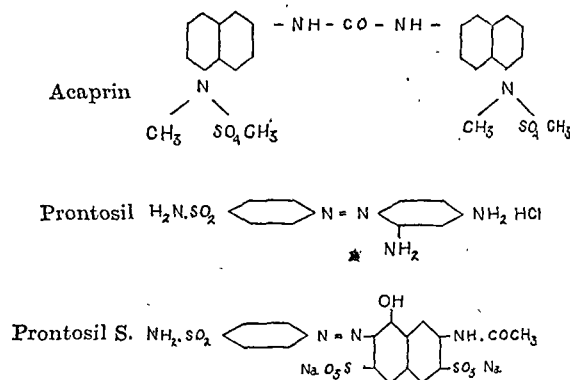
cardiovascular syphilis was twenty years; yet in 25 per cent. it was within ten years.

On the other hand, H. Schlesinger² thinks that certain clinical features are sufficient for an early diagnosis, even in the absence of X ray changes and of a positive Wassermann test. He attaches importance to certain signs usually considered too late in appearance to be of value, such as a distant first, and a ringing second aortic sound in conjunction with a low systolic pressure, aortic incompetence, and a systolic murmur at the aortic area. Symptoms which he regards as of great diagnostic value include dyspnoea of sudden onset and without obvious cause, and aortalgia—i.e., retrosternal pain not related to effort. Severe and long-lasting retrosternal pain, similar to that of atheromatous coronary occlusion, is also described, but it is stated that there is no sense of impending death, and that this is an important point in differential diagnosis. This symptom, however, is thought to-day to be neither constantly nor specifically related to coronary occlusion, and its absence cannot therefore be held to be of much help in diagnosis. Many of these symptoms obviously depend on lesions involving the aortic cusps and coronary orifices; and it would seem that when these complications have developed the pathological process has gone too far for diagnosis to be of much value.

CHEMOTHERAPY IN STREPTOCOCCAL INFECTIONS

THE limitations of chemotherapeutics in controlling infective diseases are as remarkable as its successes. In a lecture delivered to the section of tropical diseases and parasitology of the Royal Society of Medicine on Oct. 3rd Prof. H. Hörlein, of Düsseldorf, elaborated the thesis that the possibility of combating infective diseases with chemotherapeutically active substances depends to a large extent on the structure of the pathogenic organism. The more highly developed the pathogenic organism, the more points for attack it appears to offer to the action of chemotherapeutic substances. Many infections with different kinds of protozoa and spirochaetes have yielded to appropriate synthetic remedies, but bacterial infections generally have hitherto proved disappointingly resistant to such agents; and apart from the cure of contagious pleuro-pneumonia in horses with neoarsphenamine, we have, as yet, no chemotherapeutic substance which is active in virus diseases. Not only spirochaetal diseases such as syphilis, relapsing fever, frambosia, and protozoal diseases such as trypanosomiasis, malaria, amoebic dysentery, and leishmaniasis, but epizootics resembling human diseases are also relatively easy to deal with by synthetic drugs. Diseases of animals which, though attributable to protozoa, are not closely related to the tropical diseases of man are not amenable to such treatment. The most important of these epizootics are the piroplasmoses, which are caused by babesiae and theileriae and are found not only in tropical and subtropical regions but also in temperate zones. Piroplasmosis is a condition marked by chronic irregular fever, enlargement of the spleen, bronchitis, oedema of the feet, subcutaneous haemorrhage, and diarrhoea. It affects dogs, horses, sheep, and oxen. Trypan-blue, originally recommended by G. H. F. Nuttall for this condition has been used against the disease with some measure of success. Prof. Hörlein claims that a new compound Acaprin prepared in his laboratories is three times as

active as is trypan-blue for piroplasmosis. Even more interesting, however, are his claims for two other new compounds Prontosil and Prontosil S., which are said to be potent against infections caused by haemolytic streptococci. The results of the



administration of either of these two compounds, which can be given by mouth or by subcutaneous injection, to mice experimentally infected with this organism by the intraperitoneal route have been so encouraging as to lead to their trial in human patients. 1500 case records are now available in Germany of acute infections caused by the *Streptococcus haemolyticus* and treated by prontosil or prontosil S. These infections included many cases of puerperal sepsis. The results as a whole were described by Prof. Hörlein as being strikingly successful, though exact figures are still to come. In the course of the discussion Dr. G. A. H. Buttle, working at the Wellcome Research Laboratories, described his own experience with the drug in infected mice. Whereas in Prof. Hörlein's series all the afflicted mice recovered, Dr. Buttle, using different strains of streptococci, was not successful in doing more than delaying death. But it emerged that certain differences in technique might have accounted for the discrepancy, and Dr. Buttle left no doubt in the minds of the audience that the new compound is therapeutically active; the point at issue is only one of degree. Dr. P. Manson-Bahr, who presided over the meeting and translated Prof. Hörlein's replies, which were made in German, with considerable skill, voiced the impression of all present that a contribution to chemotherapeutics had been made by Prof. Hörlein and his co-workers which might indeed prove to be monumental.

NEXT Friday, Oct. 18th, Sir Henry Dale, F.R.S., will deliver the Harveian oration of the Royal College of Physicians of London. His title is Some Epochs in Medical Research.

THE Metropolitan Hospital last week announced its incorporation as a company limited by guarantee. The management committee will thereby avoid personal responsibility for the discharge of the hospital's liabilities, should the assets at any time be insufficient for the purpose. Such a responsibility, however remote, might, it was felt, deter persons whose services would be valuable to the hospital from joining the committee. When the Queen's Hospital for Children recently took a similar step we pointed out the convenience to a hospital of becoming an independent legal entity with an existence separate from the existence of the total of its members. The system of incorporated companies dispenses with the system of trustees.

² Arch. f. Inn. Med., 1935, xxvi., 341.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXII.—PROGNOSIS IN CEREBRO-SPINAL FEVER

WITH a disease so variable in its course as cerebro-spinal fever, prognosis is often difficult to determine. Cases admitted to hospital in an apparently hopeless condition of coma may recover, while others, from all appearances mild in character, prove fatal owing to the subsequent development of internal hydrocephalus or of a progressive increase in the purulency of the cerebro-spinal fluid.

The various factors on which an opinion may be based are as follows :—

GENERAL CONSIDERATIONS

Early diagnosis.—This factor is of paramount importance as the earlier the disease is diagnosed the earlier can serum treatment be instituted. All observers agree that early treatment by means of lumbar puncture and serum administration is one of the most hopeful of prognostic indications. One should always perform lumbar puncture in doubtful cases rather than lose the opportunity for the early application of treatment.

Stage of epidemic.—During the early stage of an epidemic fulminating cases are more frequent than in the later stages, when the disease is usually milder and less liable to prove fatal.

Age of patient.—The mortality is distinctly heavier among infants and adults over forty. Infants under two years of age show the greatest mortality (80 per cent.); after two years the death-rate tends to decrease towards the fifteenth year. It then rises again showing a slight fall between 20 and 30. After 30 it rises considerably and increases with each subsequent decade.

Previous health.—The presence of chronic nephritis, chronic alcoholism, or latent tuberculosis impairs the patient's chance of recovery. Apart from such conditions, general health and constitution have little apparent influence; strong and robust individuals often die rapidly while those of poor physique recover.

Mode of onset.—A gradual onset is usually more favourable than one that is sudden and abrupt. The absence of vomiting at the onset of other than fulminating cases is of somewhat favourable import. Early loss of consciousness does not necessarily indicate that the outlook is bad.

Type of case.—The term "fulminating" or "malignant" is applied to those cases beginning abruptly and proving fatal within 24 to 48 hours of the onset. They are frequently met with early in an epidemic. It is in this type of the disease that the purpuric eruption, consisting of large plum-coloured spots, is most often seen, and has produced in the lay mind the dread associated with the name "spotted fever."

The prognosis in the posterior basic type of infants is also bad, the mortality being about 70 per cent. The type termed by A. M. Kennedy and myself "progressively purulent type," in which there is a gradual and progressive increase in the purulent consistency of the fluid obtained by lumbar puncture, is invariably fatal. In subacute cases the outlook is more hopeful than in acute ones (14 per cent. as compared with 55 per cent. in acute cases of all types).

Temperature and pulse.—The temperature and pulse-rate during the first day or two are guides merely to the severity of the disease and have no definite

prognostic value. Continued hyperpyrexia during the course is of exceedingly grave import.

Cerebro-spinal fluid at the first lumbar puncture.—A purulent (yellowish) fluid obtained at the first lumbar puncture is of graver significance than a merely turbid (whitish) one, but by no means indicates that the patient will not recover. Excluding fulminating cases, among those showing merely a turbid fluid at the first lumbar puncture, recovery resulted in 77 per cent. of our own cases. From the presence of numerous meningococci on microscopical examination of the first samples of cerebro-spinal fluid obtained, no definite conclusions as regards prognosis can be drawn, but failure to find the diplococci after prolonged search is distinctly favourable.

Type of coccus.—In general, the isolation of a type II. (Gordon) coccus appears to offer the most favourable prognosis. During the war, the mortality of our type II. cases was 30 per cent. as compared with 40 per cent. for type III. Type I. coccus is somewhat resistant to treatment and usually gives rise to severe forms of the disease (60 per cent. mortality).

Method of treatment.—Most observers agree that the intrathecal administration of serum remains the method of choice and that the lumbar route is preferable to the cisternal. Cistern puncture entails more risk—especially of hæmorrhage—even in skilled hands, and there is no evidence that serum is any more efficacious when given by this route. Also, the subarachnoid space cannot be so adequately drained as by lumbar puncture. The administration of serum in the lumbar region entails practically no risk, and it has been shown (Carnegie Dickson: Brit. Med. Jour., 1917, i., 454) that solutions injected into the subarachnoid space by lumbar puncture penetrate readily into the chain of cerebral ventricles, reaching even to the tips of the lateral ventricles. Some authorities prefer to give serum intravenously, either with or without intrathecal injection, especially during the first few days of illness and in cases showing a petechial rash.

Serum administration may cease when organisms have disappeared from the cerebro-spinal fluid and the patient is improving, but drainage of the subarachnoid space by lumbar puncture should be continued daily until the cerebro-spinal fluid is practically clear.

SPECIAL FEATURES

Rash.—If well-marked purpuric blotches (vibices) are present the case is nearly always fatal. A petechial rash appearing on the first or second day is sometimes said to be unfavourable. In my experience, however, fully 50 per cent. of these cases recover.

Mental changes.—Intense restlessness occurring early in the disease is of rather more serious import than delirium. Nevertheless, if delirium increases the prospect of a favourable termination becomes worse. Hallucinations occurring after the third or fourth day are unfavourable; they are often present in the progressively purulent type of case which invariably proves fatal. Cases in which mental symptoms are entirely absent nearly always recover.

Head retraction.—This symptom occurring in adolescents and adults is by no means so unfavourable a sign as has been supposed by some writers. In a series of military cases, 18 years of age and over,

who showed marked occipital retraction during the course, 60 per cent. recovered.

Motor disturbances.—Catching at imaginary objects and picking at the bedclothes (carphology and floccitation) are unfavourable signs. Also a convulsive seizure occurring in an adult must be regarded seriously; in infants convulsions have not the same significance. Nystagmus is sometimes associated with internal hydrocephalus, the prognosis of which is grave.

Condition of sphincters.—From the presence of retention or incontinence during the early stages of illness, no conclusion as regards prognosis can be drawn. These symptoms, however, occurring later in the course constitute an unfavourable development. When incontinence is suddenly replaced by retention the outlook is grave rather than otherwise.

Abdominal reflexes.—These reflexes are often diminished or absent early in the disease. Their return or increase is a sign that the patient is progressing favourably. Similarly, their disappearance is an unfavourable indication. Cases in which they are retained throughout usually recover.

Herpes.—The presence of facial herpes has been thought to furnish a sign indicating that the patient's chance of recovery is distinctly favourable. It is true that most cases showing herpes recover, but its occurrence is of no definite value. In our own series of cases in which facial herpes developed the mortality was 23 per cent.

Blood pressure.—The presence of a continued low blood pressure, especially below 100 mm. Hg, during the first two days of illness is of grave significance.

Arthropathies are considered by some authors to be of good prognosis as regards ultimate recovery from meningitis; in our experience the mortality in cases with this complication is nearly 50 per cent.

The development of *pneumonia* as a complication is a most serious but not necessarily a fatal occurrence.

Pericarditis nearly always heralds a fatal termination.

CEREBRO-SPINAL FLUID DURING THE DISEASE

Quantity.—The daily evacuation of 40 to 70 c.cm. of cerebro-spinal fluid is more hopeful than when only small amounts are obtained; the latter may indicate impending internal hydrocephalus or increasing purulency. A "dry tap," provided one is quite certain that the subarachnoid space has been entered, is a most unfavourable sign. At least three different interspaces should be entered before a "dry tap" is regarded as conclusive. Cisternal puncture is then advisable.

Density.—Rapid or gradual decrease in the turbidity of the fluid is the rule as recovery proceeds and is an indication that the case is progressing favourably, providing fair quantities of fluid are obtained. Increase in the thickness and purulency of the fluid leading to difficulty of withdrawal through the lumbar puncture needle is one of the gravest of signs. It is seen in cases of the progressively purulent type and invariably leads to a fatal result.

Glucose reaction.—Persistent absence of glucose in the cerebro-spinal fluid is of distinctly bad prognosis. The return of glucose, having previously been absent, heralds definite clinical improvement; a recrudescence, however, may occur during which it again disappears. The glucose reaction invariably returns as the patient recovers.

Bacteriological findings.—On the whole, failure to obtain meningococci in culture from fluids subsequent to that withdrawn at the first lumbar puncture is a good prognostic sign. On direct microscopical examination of films of the cerebro-spinal fluid, the

presence of intracellular organisms is generally a more favourable sign than when they are chiefly extracellular. If extracellular forms predominate the case is not doing well.

COMPLICATIONS

Internal hydrocephalus.—The occurrence of hydrocephalic symptoms must be viewed with extreme gravity. Repeated lumbar puncture, however, may alleviate the generalised form. Even when internal hydrocephalus (closed meningococcal infection) is present the prognosis is not necessarily hopeless if appropriate measures of treatment are adopted.

Hemiplegia is not common, but may appear both in acute and subacute cases and often late in the disease. In some cases it is transitory, lasting only about 36 hours; in others it may be more permanent. In general the prognosis of hemiplegia occurring during the course is good, but when the paresis lasts for some time a residual palsy often remains. In rare instances an intercurrent cerebral hæmorrhage may occur, especially in patients with pre-existing nephritis or hyperpiesis; if not fatal it usually leads to some degree of permanent hemiplegia.

Monoplegia.—A flaccid paralysis localised to one limb or even a group of muscles is occasionally met with. Sometimes the condition is merely transitory and passes off within a day or two. In other cases however, the paralysis is more persistent and leads to the disappearance of the deep reflexes and muscular atrophy. These pareses appear to be due to involvement of anterior spinal nerve-roots, probably as a result of purulent infiltration of their pia-arachnoid sheaths. Unless the paralysis is extensive the prognosis is hopeful as regards ultimate recovery of movement.

Paraplegia is almost invariably of the flaccid variety, resembling that seen in acute myelitis. The prognosis is bad and the case usually proves fatal. Weakness of the legs and unsteadiness of gait with exaggerated deep reflexes is frequent during the early stage of convalescence. As a rule improvement is rapid.

Peripheral neuritis is rare, but may occur quite apart from the flaccid paralyses already mentioned. Recovery is the rule, although loss of the deep tendon reflexes may persist.

Keratitis.—In severe cases superficial corneal ulcers may develop in the absence of other ocular complications; they usually heal without perforation.

Irido-choroiditis.—This grave complication is fortunately rare. Loss of vision is the usual sequel, the eyeball becoming atrophied and the lens opaque. Occasionally an irido-choroiditis may lead to panophthalmitis; if this occurs and the patient recovers from the meningitis the affected eye usually remains permanently blind.

Orbital cellulitis is extremely rare. When it occurs it often terminates in thrombosis of the cavernous sinus with a fatal result.

Amaurosis.—This is a comparatively rare complication, and is most frequent in the posterior basic type of the disease affecting infants (about 30 per cent.). Occasionally blindness may appear somewhat suddenly and pass off after a certain period. In the other cases the blindness is permanent.

Deafness of central origin.—Deafness occurring at the outset or very early in the course of the disease may show a gradual disappearance as the patient's general condition improves. In most cases of temporary deafness improvement in hearing is noted only during convalescence. If recovery does not

occur then the patient is likely to be permanently deaf. In these cases it is always bilateral and usually appears early in the disease, rarely later than the first week of illness.

Pyelitis.—This complication is frequent in some epidemics while in others it is rare or absent. The pyelitis is of a benign type and never develops into true surgical kidney.

Nephritis is an infrequent complication. The possibility of pre-existing nephritis has to be borne in mind. In these cases the prognosis as regards life is unfavourable. In nephritis occurring as a direct complication of the cerebro-spinal fever the prognosis is good.

Epididymitis is occasionally observed during the early days of convalescence when a patient has

recovered from the actual meningitis. The inflammation subsides in from ten to twenty days.

Arthropathies.—The joint lesion appears to be a synovitis rather than a true arthritis. Unlike gonorrhoeal arthritis, involvement of the peri-articular tissues leading to adhesions and ankylosis is exceedingly rare. Not infrequently the joint condition is merely transitory, the effusion disappearing within a few days and leaving the joint apparently normal. At other times the arthropathy is more persistent, but eventually disappears if the patient recovers from the meningitis.

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SPECIAL ARTICLES

BRITISH MEDICAL ASSOCIATION

MEETING IN MELBOURNE

SECTION OF PATHOLOGY AND BACTERIOLOGY

At a meeting of this section, presided over by Prof. A. MURRAY DRENNAN (Edinburgh), a discussion on

The Problem of Calcification

was opened by Dr. F. HANSMAN (Sydney). After describing briefly the process of calcification and ossification in the normal development of bone, he spoke of the chemistry of osteoid tissue and the state in which the calcium salts are laid down in this tissue. It appeared, he said, that calcium carbonate and phosphate are deposited together in crystalline form, but apparently not always in the same proportions. In blood plasma calcium probably existed principally in the form of calcium proteinate, which ionised as a weak electrolyte into calcium ions and protein ions. The precipitation of calcium from serum or lymph to form bone salts in the matrix of cartilage and osteoid was controlled by what might be termed an "enzyme complex," consisting of the enzyme phosphatase, some second calcifying factor as yet ill-defined, and vitamin D. It was necessary to postulate the existence, in hypertrophic cartilage and osteoid, of this second calcifying factor, because phosphatase was known to be present in many other situations in which however calcification did not occur. Recent work suggested that it was the second calcifying factor which was influenced by vitamin D. Dr. Hansman then went on to discuss the interdependence of ingested calcium, phosphorus, and vitamin D for calcification. Dietetic experiments with various animals showed that improper Ca : P ratio, as well as vitamin-D deficiency, may occasion a variety of bone diseases which have their counterparts in human pathology, though the exciting causes may not always be the same in man and animals. In discussing the amounts of calcium and phosphorus required for normal calcification in growing children, Dr. Hansman cited Sherman's estimate that at least one gramme of calcium a day is necessary, an estimate which, however, he regarded as too high. From his own survey of the diets of 200 normal children of the working and middle classes in Sydney, it appeared that 0.5 g. or less of calcium per diem was adequate. The requirements of phosphorus in the diet could not be similarly considered,

because much of the phosphorus was needed for metabolic processes other than calcification; but there was evidence that the problem of phosphorus requirements was more important than that of calcium requirements.

Prof. P. MACCALLUM (Melbourne) said that calcification occurred in two main situations: (1) in the hyaline matrix of cartilage or bone, and (2) in areas of necrotic tissue. Before we could understand completely the process of deposition of bone salts, we would need to know more of the properties of the mucoproteins present in cartilage and ossein. Hydrogen-ion concentration must be important. With regard to the state of vitality of the hypertrophic cartilage cells before calcification, the presence of a healthy looking Golgi apparatus in these cells suggested that they were not senescent but were healthy viable cells. Calcification in dead tissue was of much interest. How did the calcium reach the dead material? There was probably a definite topographical relationship to the circulation—witness the frequent presence of multiple discrete foci of calcification in the dead material, and also the frequently peripheral distribution of calcification in such lesions.

Dr. E. S. J. KING (Melbourne) referred to the experiments of Huggins which he had repeated. If bladder epithelium was transplanted into the abdominal wall of dogs, calcification and ossification took place in the tissues external to the regenerating part of the epithelial cyst which developed, and the fluid contents of the cyst contained phosphatase.

Dr. R. A. WILLIS (Melbourne) said that the experiments of Huggins had in part been anticipated by several German workers of last century, who had found that, after ligation of the renal pedicle in rabbits and other animals, plates of bone developed around the pelvis of the damaged kidney. Dr. Willis had repeated this experiment in rats and had obtained a like result.

Dr. R. D. WRIGHT (Melbourne) said that examination of sections of non-decalcified bones made it evident that the bone salts were deposited in very finely crystalline form. In a sequestrum the particles of calcium salts were much coarser, and there was also conspicuous loss of protein. The crystals of bone salts also exhibited a characteristic orientation, and it might well be that the increased skiagraphic density of sequestra was due, not to raised calcium content, but to loss of the proper orientation of crystals so that greater reflecting surfaces were presented to X rays.

Dr. J. V. DUNG (Brisbane) had been specially

interested in calcified arteries, in which the Ca : P ratio and also the phosphate : carbonate ratio were almost constant and corresponded closely with the ratios in normal bone. His observations on the calcification of costal cartilages, which was very capricious, suggested to him that it depended essentially on the presence of vascular lesions, and he thought that calcification in general might well be studied from this point of view.

Dr. HANSMAN, in reply, said that like Prof. MacCallum he believed that the hypertrophic cells of calcifying cartilage were not moribund but healthy and functional. With respect to Dr. Duhig's remarks on arterial degeneration, there were many other factors—e.g., the metabolism of lipid—which made this problem a complex one difficult of analysis.

Pathology of Osseous Tissue

The PRESIDENT (Prof. Drennan), in opening the second discussion, said that bone differed from soft tissues only in that it was a hard tissue with a high mineral content. Its hardness was the main factor in modifying pathological changes in the tissue—for example, the slow removal of sequestra in inflammatory diseases of bone was a consequence of its hardness. Prof. Drennan then went on to consider some of the dystrophic diseases of bones. He outlined the principal structural changes in osteitis fibrosa due to parathyroid over-activity, and emphasised that no special histological type of parathyroid overgrowth could be incriminated. The structural changes in osteitis deformans were very similar to those in osteitis fibrosa, but with bone deposition predominating over bone resorption; and there was no definite evidence that osteitis deformans was an endocrine disturbance. Regarding the reactions of bone to invading tumours, dural meningioma provided an interesting instance, exemplified by a remarkable case which he described. The so-called "benign" giant-cell tumour of bone had better shed its benevolent title, for it might yield metastases. In a recently observed case of tumour of the humerus, biopsy sections had the structure of the so-called "benign" giant-celled growth; but, after amputation, more thorough sectioning of the growth revealed also areas of osteogenic type, and the patient subsequently died with large pulmonary metastases. Prof. Drennan concluded his address with an account of two cases of plasmocytoma of the spine.

Prof. MACCALLUM spoke of the views of Leriche and Policard on osteogenesis, and maintained that the evidence in their favour was unsatisfactory. He also said that the mechanical efficiency of bone might depend not only on its calcium content but on the quality of the matrix.

Dr. K. INGLIS (Sydney) mentioned a case like that described by the president, in which an osteogenic sarcoma showed areas resembling giant-cell tumour. He asked whether Prof. Drennan thought that osteoclasts were essential to bone resorption. He also mentioned the occurrence of heterotopic bone in the liver of a dog exposed to X rays.

Dr. KING described the metaplastic changes in the joint tissues and bones of Charcot's joints; and also the development of metaplastic bone in the walls of arteries. From a study of bone sarcomas he believed that many of these contained hæmopoietic tissue as an integral part of the growths.

Dr. WILLIS said that bony metaplasia in connective tissues showed that even in the adult body the tissues had not completely lost that plasticity which was characteristic of the early embryo. Since

connective tissue could become bone, and vice versa, it was probable that reversible osteoblast-fibroblast transformations were of great importance in bone pathology.

Dr. DUHIG mentioned a case of sarcoma supervening on osteitis deformans, and asked how common this change was.

Dr. WRIGHT said that Leriche and Policard's views did not accord well with his observation that in limbs which were the seat of arteriovenous aneurysms, no abnormalities were found in the bones in spite of the altered circulatory state.

The PRESIDENT, in reply, agreed with Dr. Willis that osteoblasts and fibroblasts need not be looked upon as rigidly specific types of cells. In answer to the question of Dr. Inglis, he said that bone resorption was possible without osteoclasts, and the factors determining the numbers of these cells were obscure. To Dr. Duhig he said he did not know how often sarcoma supervened on osteitis deformans, but this finding was certainly uncommon.

Leukaemic Infiltrations and Teratomata

Leukaemic infiltrations was the subject of a brief paper by Prof. J. B. CLELAND (Adelaide), who described several cases in which post-mortem study revealed unsuspected leukaemic infiltrations of heart, kidneys, pancreas, and other organs. He emphasised the difficulty of differentiating sharply between leukaemias and lymphosarcomatosis which might yield identical histological appearances in various viscera, as might also acute Hodgkin's disease.

Neural Components in Teratomata.—Dr. WILLIS illustrated this subject by a series of lantern slides. Teratomas when adequately examined were found to contain neural tissues very frequently—in 18 of 22 specimens studied by the speaker. These tissues took all possible forms, including immature neuro-epithelial tubules, differentiating spongioblastic tissue, fully differentiated neuroglial areas with astrocytes which stained typically with Cajal's gold sublimate, nerve-cells in central nervous tissue, ependymal cavities, choroid plexus, peripheral ganglia, nerve bundles, and pacinian corpuscles.

SECTION OF SURGERY

ADVANCES in our knowledge of hydatid disease during the twentieth century was the subject of a discussion at this section opened by Prof. HAROLD R. DEW (Sydney).

Hydatid Disease

In Australia, he said, the disease first came into prominence in the 'sixties, and reached its peak incidence in the 'nineties. The clinicians of this time, meeting with the condition in all its manifestations, used their opportunities to the full and made many original observations on the clinical side. During the next thirty years, indeed, nearly all the problems of immediate practical importance were solved. To-day the disease had much diminished in frequency; it was well recognised that the commonest source of human infestation was direct contact with infected dogs, and that factors like infected water-supplies and raw vegetables were of little importance. Such infestation was readily preventable and easy to control, and its incidence should be further decreased by public health propaganda. The hydatid registry of the Royal Australasian College of Surgeons was inquiring into the incidence and distribution, but further individual research was also needed.

Prof. Dew thought that the general pathological

advances in Australia had kept abreast of those in other countries. Hydatid pathology had been revolutionised since the publications by Deve, and later by Australian and South American workers, of experiments proving that germinal elements in the form of relatively differentiated scolices derived from a fertile primary cyst could, if shed into tissues, serous cavities, or the blood stream, undergo a complete metamorphosis and become in their turn fertile secondary cysts. Clinical observation had confirmed these experiments, and the difference between primary and secondary cysts, the nature of recurrent cysts, multiple cysts, and metastatic cysts, was now appreciated. As a rule infestation occurred in childhood and the average cyst was almost as old as its host. The histogenesis of the parasite, its structure, mode of growth, and diverse pathological appearances in both man and animals were now more completely understood.

A case of alveolar hydatid, the first to be reported in Australia, which he had described in 1931, had, he said, negated the geographical argument of the dualist school, which believed that alveolar hydatid was due to a specific parasite distinct from the common form. Another important advance was the recognition of the anaphylactic nature of many symptoms of hydatid disease. It was now appreciated that symptoms were due to pressure, leakage, or infection, and he believed that the pathology and symptomatology of hepatic hydatid, its intrabiliary rupture, intraperitoneal rupture, and intrathoracic extension, were fully understood. Information was still required, however, regarding growth, distribution, and complications. Radiography had been an invaluable aid in diagnosis, and it was to the radiologist that the speaker would look for further knowledge.

The importance of the immunological tests was well known, and Prof. Dew hoped that further experimental work would throw light on their relative value and fallacies. As regards treatment, Australian surgeons had played their part in the development of radical surgical methods. Although as much was now known about hydatid as about any other disease, all possible use should be made of opportunities for further investigation—opportunities which Australia in particular could offer.

Mr. B. KILVINGTON (Melbourne) confined his remarks to calcification in hydatid cysts. At the Melbourne Hospital in the last ten years 86 per cent. of the calcified cysts found were in the liver, and he believed that this was due to the thickness of the adventitious layer in this situation. He pointed out that 46 per cent. were discovered in routine examination and presented no symptoms. The death-rate was between 5 and 10 per cent. and was always due to infection. In treatment, he accentuated the advantages of crushing the cyst, swabbing with strong formalin, and drainage. In his two cases thus treated the calcified material had soon been extruded, with subsequent closure of the sinus.

Dr. D. CARMALT-JONES (New Zealand) described the life cycle of *Tania echinococcus*. A hydatid registry, he said, had been established in New Zealand under the leadership of Sir Louis Barnett. When the registry possessed 1000 cases of hydatid disease they intended to hand over their data to the hydatid registry of the Royal Australasian College of Surgeons.

Mr. H. R. G. POATE (Sydney) discussed intrabiliary rupture of liver hydatids. He described how the common bile-duct became blocked by membrane or small cysts following erosion of the larger bile-ducts. In dealing with the diagnosis, he pointed

out that confusion often existed between this disease and gall-stone attacks. Common bile-duct drainage, he said, was advantageous for deep liver cysts communicating with the ducts.

Dr. S. C. FITZPATRICK (Hamilton, Victoria) spoke of the incidence of hydatid disease in various parts of Victoria, excluding the metropolitan area, pointing out that the disease was most prevalent where the number of sheep was greatest. In referring to liver cysts he emphasised the advantages of the sub-pleural route of approach.

Dr. K. FAIRLEY (Melbourne) confined his remarks to the immunological reactions. The precipitin test, he said, was comparable to the complement-fixation test, and had been discarded in favour of the latter, which was quantitative. This test was of value especially with complicated cysts and was the only one useful in the diagnosis of recurrent cysts. The Casoni test was helpful only in the pre-operative diagnosis of the primary cyst.

Dr. K. S. CROSS (Melbourne) showed X ray photographs of hydatid cysts. He said that localisation was more accurately determined by two views taken at right angles than by stereoscopic views.

Mr. H. B. DEVINE (Melbourne) supported by Mr. B. QUICK (Melbourne) uttered a warning against the use of formalin, and Mr. MURRAY MORTON said that the disasters which followed formalin treatment were due to the fact that Deve's technique was not carried out accurately. If this were done, in his opinion, no ill-effects would be experienced.

Sir THOMAS DUNHILL (London) paid a tribute to Deve and Dew for their work. He pointed out that the morbidity, apart from the mortality, was very great.

Prof. DEW, in reply, agreed with Mr. Kilvington in leaving calcareous cysts alone as long as possible, and with Mr. Poate in attacking the common bile-duct in most cases of liver cyst with intraduct rupture. He emphasised the importance of adhering to Deve in the use of formalin.

Surgery of the Pancreas

Mr. HAROLD UPCOTT (Hull), opening a discussion on surgery of the pancreas, said it was generally agreed that acute pancreatitis was caused by infection, the biliary tract being the usual source. He pointed out that three anatomical types were recognised, hemorrhagic, gangrenous, and suppurative. To these he added a fourth, the pancreatic oedema of Archibald and Elman. Enumerating the symptoms and signs, he laid stress on the difference between pancreatic oedema and acute pancreatitis, and also referred to the confirmatory tests used as an aid to diagnosis. The treatment was operative, external drainage of the biliary system being essential. If effusion was great the gland itself could be drained, but the drainage should not be discontinued too soon for fear of a pseudo-cyst forming. Going on to speak of chronic pancreatitis, Mr. Upcott said he believed that constant boring epigastric pain was common to most pancreatic infections and was due to the proximity of the coeliac plexus. Of the functional tests employed as an aid to diagnosis, the estimation of blood diastase was the most reliable; the diastase was increased if the ducts were obstructed, and diminished if the acini were atrophied. Treatment consisted in the establishment of biliary drainage. Pancreatic cysts Mr. Upcott divided into four types: (1) retention cysts, (2) neoplastic cysts, benign or malignant, (3) pseudo-cysts, (4) parasitic cysts. In mentioning post-operative pancreatic fistulae he suggested their dissection and implantation into the

stomach. In cases of carcinoma of the pancreas blood transfusion was useful. Surgery endeavoured to relieve the jaundice and duodenal obstruction and to remove the growth. In certain cases of hypoglycaemia attributed to excessive insulin production, local overgrowth, adenoma, or adenocarcinoma of the pancreas had been found; and if other causes of hypoglycaemia could be dismissed, pancreatic exploration was justifiable. Where no tumour was found subtotal pancreatectomy was a possibility; Mr. Upcott mentioned Graham's case, and concluded with a plea for further experimental work in this direction.

Mr. F. C. PYBUS (Newcastle-upon-Tyne) confined his remarks to acute pancreatitis, emphasising the almost constant association of pancreatitis with biliary infection. The four types of acute pancreatitis mentioned by Mr. Upcott were, he thought, rather stages in progress of the one disease than separate types. He favoured conservative treatment and subsequent drainage of any abscess formed, provided the pre-operative diagnosis was absolutely certain.

Mr. BALCOMBE QUICK (Melbourne) compared the figures of the Alfred Hospital, Melbourne, and the Johns Hopkins Hospital, Baltimore, and showed that acute pancreatitis was ten times commoner in Melbourne. He assumed that this was because the disease was more often recognised in Melbourne. He referred to the great value of the urinary diastase test for confirmation of diagnosis, and agreed with Mr. Pybus in advising delayed treatment if the diagnosis were certain.

SECTION OF MEDICINE

On Sept. 11th, Lord HORDER being in the chair, Prof. C. G. LAMBIE (Sydney) opened a discussion on

Obesity: Ætiology and Metabolism

Obesity, or excess of *dépôt fat*, was, he said, important clinically as a disfigurement, a disease, or a sign. It might produce distress, impair the sense of well-being, and even be a menace to life itself. That it shortened life was shown by insurance records. The simplest of the many formulæ given for calculating the ideal weight, although not taking into account the build of the patient, was that of Broca, where

Weight in kilos = Height in centimetres less 100.

The normal variations ranged between 15–20 per cent. above or below the calculated weight. An expression of the grade of obesity was given by dividing the actual body-weight by the ideal body-weight. The energy balance, a disturbance of which might give rise to obesity, was shown diagrammatically as follows for a male 70 kg. in weight, 170 cm. in height, aged 24 years, and performing light work:

	Calories.
Basal metabolism	1706
Activity	534
Specific dynamic action	285
Total food equivalent	2525

The energy required for activity, was much smaller than that for basal metabolism. Most persons over-eat and the possible ways of dealing with excess food were as follows:—

1. Limitation of absorption. } (Not proved
2. Elimination. } experimentally.)
3. Increased mechanical work.
4. Combustion (*luxus consumption*).
5. Storage.

He explained the anomaly of persons who ate excessively and yet remained constant in weight by *luxus consumption*, which had been proved in case of herbivora, although not in man. The amount of energy that could be disposed of by *luxus consumption* was approximately 60–65 per cent. of that required for basal metabolism, although it varied greatly in different individuals, and if it were low obesity was likely to develop from over-feeding. High sugar tolerance, if due to hyperinsulinism, would lead to obesity. Similarly low sugar tolerance caused by pituitary basophilism, abnormality of the adrenals or thymus, would also cause the excess syndrome. Lesions of the diencephalon gave increased liver glycogen and obesity.

In concluding, Prof. Lambie classified obesity as:—

- | | |
|-------------------------|-------------------------|
| A. Developmental | ? Hereditary. |
| B. Metabolic: | Hereditary or acquired. |
| Endocrine. | |
| Nervous (hypothalamic). | |
| Neuro-endocrine. | |
| C. Nutritional. | Acquired. |

Sir JAMES PURVES-STEWART (London) discussed the endocrine aspect of obesity and stressed the importance of the thyroid and pituitary glands. Pinea obesity was probably due to mechanical pressure on the pituitary gland. Pancreatic obesity due to hyperinsulinism was not frequent. Genital obesity occurred after castration or the menopause, and increase in weight during the menstrual period was noted in some fat persons. Adrenal obesity was found chiefly in women associated with subinvolution of the uterus and ovaries. Subthyroid obesity was especially marked after pregnancy; it was most obvious in the regions of the buttocks, thighs, abdominal wall, and breasts. Pituitary obesity was the most important type; it was caused by a deficiency of the basophil cells in the anterior lobe. There were grave doubts however whether the lack of hormone alone was sufficient, and it was probably a combined effect of lack of hormone and pressure on the hypothalamus. Cushing's basophil pituitary syndrome due to a mixed type of pituitary adenoma was a polygland syndrome, as it was the same as that observed in tumours of the adrenals and thymus. Obesity due to pituitary abnormalities, except tumours, were often curable, as shown by photographs of a boy who presented the typical syndrome of Fröhlich at 13 years of age, but was quite normal six years later. He had been treated with thyroid and pituitary extract.

Dr. J. H. ANDERSON (Ruthin Castle) dealt with the treatment. He stressed the importance of taking a full history and of making a complete examination so that cases could be classified according to the causative factors—endogenous, exogenous, or mixed. Where possible estimations of the basal metabolic rate, sugar tolerance, and X ray examination of the pituitary fossa should be performed. In treatment there were four lines of attack: two major, diet and exercise, and two minor, drugs and physical treatment. In most cases of obesity, diet and exercise were of paramount importance. A good reduction diet was low in carbohydrate, well supplied with protein, and strictly rationed in fat, but sufficient to carry the necessary fat-soluble vitamins. He showed the diet tables used at Ruthin Castle and stressed that the food should be varied and its bulk made up with fruit and vegetables according to the patient's inclinations. Each case must be judged on its merits, and too rapid a reduction should not be aimed at. A loss of 3 lb. per week was the average, but he

had seen as much as 12 st. lost in 8½ months. The food should be weighed in some cases and the patient should be weighed weekly and regulate the diet accordingly. Exercise should be regular and the amount should depend on the condition of the patient. Blood pressure and pulse estimations before and after exercise were useful guides in estimating this. Drugs should find their greatest use in endogenous obesity, but except in some cases due to hypothyroidism, diet and exercise were also necessary. True hypothyroid cases should not be put on reduction diets, as they stood it badly. Great care should be exercised with thyroid medication. A rise of pulse-rate of 10-15 per minute suggested overdosage. He cited two cases who had been slimming by thyroid that had led to fibrillation and oedema. Many cases of exogenous obesity were helped by gr. ½ of thyroid twice daily. Physical measures in the form of massage, electric light baths, and the Bergonié chair had little effect on the weight.

Dr. E. H. STOKES (Sydney) discussed the relationship between obesity and hypertension. He had investigated the relationship between the two conditions in his last 1000 cases in private practice. Of these 81 (43 females and 38 males) were 20 per cent. or more over-weight according to standard tables. Of the 81 patients, 18 (15 females and 3 males), i.e., 22 per cent., had systolic blood pressures of 160 mm. of mercury or more. In contrast, 6 per cent. of the non-obese group of 919 had blood pressures of the same order. Although the two groups were not strictly comparable, it appeared that hypertension occurred much more frequently in the over-weight group. Approximately half of the 18 hypertensive over-weight patients were females between the ages of 45-55. Only four cases showed evidence of endocrine disturbance. They included one acromegalic, one hypothyroid, and two diabetics. In his experience loss of weight was often followed in the obese by fall in blood pressure, and he therefore thought it not unreasonable to consider the converse could take place. He suggested that pituitary disturbance could cause both the hypertension and the obesity and concluded by saying that on present knowledge it could not be assumed that obesity was actually the cause of the hypertension present in some cases.

Prof. LAMBIE, in reply, disagreed with Sir James Purves-Stewart regarding the distribution of fat in certain endocrine cases; in his experience the distribution was very variable even in the same type of case and sometimes similar in cases of different ætiology. In determining the ætiology he paid more attention to the skin and the state of development of the genitals. Deficiency of the gonadotropic hormone probably had an indirect action. In reply to Dr. Stokes he thought that the hypertensive cases should have been correlated with sugar-tolerance estimations.

Diabetic Gangrene

Dr. A. CLARKE BEGG (Swansea) said the incidence of gangrene had increased because the longer life of the diabetic had increased the incidence of arteriosclerosis. The diagnosis was easy, but any lesion of the diabetic foot should be regarded as potential gangrene. The predisposed patient should be kept slightly below normal body-weight and the urine sugar-free. Even the slightest injuries should be avoided and the feet kept warm, dry, and clean. If dry gangrene developed it should be treated conservatively; if moist, amputation should be

undertaken without delay. The procedure for mixed types should be judged on the amount of sepsis and pain, rate of spread and constitutional disturbance. In all cases thorough treatment of the diabetic state was essential.

Dr. J. C. MATTHEWS (Liverpool) said that before amputation the circulation in the limb should be estimated at different levels by a sphygmomanometer and that a line of demarcation should not be awaited too long. Gangrene of the flaps of operation wounds in diabetics should be prevented by thorough insulin treatment.

Dr. M. D. SILBERBERG (Melbourne) stressed the importance of keeping the affected part warm and dry. By means of eusol irrigations high amputation could be avoided in some cases of moist gangrene.

Dr. KIMPSON MADDOX (Sydney) said that Pickling and Hess's method of testing circulation was simple and accurate. Coronary thrombosis was common in such cases. After operation, kidney failure was not unlikely; gas-and-oxygen was the anaesthetic of choice.

Dr. E. COOPER (Melbourne) said that powerful antiseptics, such as iodine, had caused gangrene and that bedsores must be avoided at all costs. Arterio-sclerotic fundal changes were common. Not all cases of gangrene associated with glycosuria and acetonuria were due to diabetes.

Hæmolytic Jaundice

Dr. S. O. COWEN (Melbourne) read a paper on the pathogenesis and treatment of hæmolytic jaundice. The pathogenesis, he said, was obscure, but Hayden had shown that the fundamental fault was in the erythrocytes. The familial type was common. He had seen 30 cases in the last 15 years; 17 had been in the one family. Twenty cases had been subjected to splenectomy without any deaths. The most severe cases improved rapidly and survived for many years. It was advisable to remove the spleen as soon as the diagnosis was made, because severe hæmolytic crises might cause death rapidly. The severity of the disease could best be judged by a careful history, especially the family history. Thirty-five per cent. of his cases were associated with pigment stones in the gall-bladder. If possible, when performing the splenectomy, the stones should be crushed digitally without opening the gall-bladder.

Dr. C. T. C. DE CRESPIGNY (Adelaide) asked if splenectomy prevented ulceration of the legs, which was not uncommon in these cases; and what was the treatment of the blood crises?

Dr. EVA SHIPTON (Sydney) related a case of acholuric jaundice in an elderly woman.

Dr. G. COOKE (Colombo) said that splenectomy for large spleens due to malaria was very fatal owing to pleural effusions and pneumonia.

Dr. COWEN, in reply, said that splenectomy cured leg ulcerations. Crises were treated by blood transfusions, but these might be dangerous, as fatal reactions had sometimes followed their administration.

SUNDERLAND CORPORATION MENTAL HOSPITAL.—Plans for the extension of this hospital at an estimated cost of £170,000 have been approved by the visiting committee and will be sent to the Board of Control. The extensions include a new admission block, a nurses' home, and a general hospital block, and will accommodate another 240 beds. The hospital is at present much overcrowded and, it is stated, that there are 60 beds in the hospital chapel.

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE

SOME forty-five nations took part in the 10th International Congress of the History of Medicine which opened in Madrid on Sept. 22nd, 1935, under the presidency of Prof. Gregorio Marañón. There were three main subjects for discussion and the greater number of papers were read in Spanish.

Arab Medicine in Spain

Dr. FIDEL FERNANDEZ (Spain) and Dr. ZAKI ALI (Geneva) described the way in which the influx of Arabian culture following the Mohammedan invasion of Spain at the beginning of the eighth century influenced medical science in Europe generally and in Spain in particular. Although dissections and autopsies were strictly forbidden, Arabian translations of Galen's "Anatomy" and a study of skeletons wherever these could be unearthed enabled the Arab physicians to devise and undertake complicated surgical operations. Thus towards the end of the tenth century a complete treatise was written on the formation of the foetus, the treatment of pregnancy, the causes of dystocia, abnormal presentations, and the technique of version. Amongst the most famous names of the Hispano-Moresque renaissance of medicine were those of Abulcasis (936-1013) and Avenzoar (1094-1162). Abulcasis was perhaps the greatest surgeon of the Arab race, and his great medico-surgical encyclopaedia "Al Tasrif" remained for long the leading text-book in all the universities. Among other things he described the technique of actual cauterisation for the control of hæmorrhage, and for fistula, liver abscess, and other conditions; tracheotomy, lithotomy, and amputations; the treatment of wounds; the problem of suppuration; fractures and dislocations; the treatment of dental and oral deformities; the treatment of hydrocele. Avenzoar, one of a long line of famous physicians, was the first to describe cancer of the stomach, pericarditis, abscess of the pericardium, peritoneal and mediastinal abscess (from which he himself suffered), pharyngeal paralysis, otitis media, and the nervous complications of Pott's disease.

Dr. ASHER BLOOM (Cairo) showed that the osteology of Abulcasis was really derived from a part of the Talmud, known as "Michna," an ancient Hebrew compilation of the second century, in which a detailed description is given of the 248 bones of the human body. In any case it is certain that "by the tenth century the Moslems had brought to Spain a vast accumulation of Greek philosophical and scientific works, with Oriental elements added." In the twelfth century the Hispano-Jewish physician Maimonides was an outstanding figure. Personal physician to the Court of the Sultan Saladin, he was a fervent advocate of preventive measures—personal hygiene and diet—rather than drugs in the maintenance of health. The function of medical knowledge was, in his own words, "to teach humanity the causes of ill-health, the correct dietetic hygiene . . . how to prolong life, and how to avoid disease."

Dr. PIETRO CAPPARONI (Italy) described the work of Ibn-al-Baitar (thirteenth century), whose famous botanical treatise "Simplicia" constituted a remarkably complete materia medica of his day and led to great progress in therapeutics and pharmacology.

Medicine During the Colonisation of America

Prof. AUGUSTO DA SILVA CARVALHO (Lisbon) confined himself to a review of Portuguese America,

Brazil, from the time of its discovery by Pedro Cabral in 1500. The diseases encountered by the colonists included heat-stroke; virulent malaria of various types which frequently killed its victims in two or three days; goitre; parasitic infections; tetanus; typhoid, paratyphoid, and typhus; grippal influenza which decimated the country towards the end of the sixteenth century; pneumonia; scurvy; beri-beri; dysentery; syphilis; yaws; tropical anaemia; tuberculosis; small-pox; scarlet fever; yellow fever. Medical assistance was extremely scanty and precarious for a long time over the whole of South America, and for many years was almost exclusively represented by empiricists and charlatans who flocked to the country and often made large fortunes there. Many of the American Indians, however, were skilled in the lore of herbal remedies, applying various roots, barks, flowers, leaves, seeds, and fruits for the successful treatment of disease. Our knowledge of many vegetable drugs, later included in our own materia medica, is due to these early pioneers. Moreover, in the sixteenth century missionaries, especially among the Jesuits and members of the secular clergy, possessed some knowledge of medicine acquired in convents and hospitals and by the reading of books in the monastic libraries, this knowledge giving them an enormous prestige in their work of colonising and proselytising.

Dr. EMILY EMMART (Johns Hopkins) gave a description of the Badianus manuscript, a sixteenth century Mexican herbal, written in Aztec and Latin, this book representing not only Aztec medical treatments which existed at the time of the Conquest, but also the earliest academic instruction in medicine in America.—Dr. M. A. VAN ANDEL (Holland) gave an account of William Piso, physician to the Dutch West Indian Company in Brazil between 1636 and 1644. Piso was the author of a learned encyclopaedia of the natural history of Brazil, with chapters on its diseases, their origin and treatment; but his outstanding contribution to medical science is his description of dysentery and its cure by the ipecacuanha root, a specific whose virtues he learnt from the Indians who employed it as an emetic in cases of poisoning and as an astringent in chronic diarrhoea. Dr. van Anandel showed that the merit of introducing emetine into the materia medica should be attributed to Piso rather than to Garnier and Helvetius.

Medical Folk-lore

Prof. LAIGNEL-LAVASTINE (Paris), in a general introduction, said that medical folk-lore had a double interest, theoretical and practical. Modern therapeutic investigations had often confirmed the value of substances employed in popular medicine. Medical folk-lore could be classified in three groups: ethnological mutilations; magical and religious practices; and popular medicine. A study of this kind involved both psychological and social factors, of which the former were genetic and included essentially instinct, analogy, and animism with its derivatives.

Dr. J. D. COMRIE (Edinburgh), discussing the medical folk-lore of Scotland, said that one of the chief methods of healing in pre-Christian days was by bathing in or drinking from wells in which a spirit was believed to reside. Christian missionaries coming to Scotland in the seventh century and finding this form of healing firmly fixed among the people, blessed the wells, giving them the names of various saints, and some of these wells are still used for healing purposes. Balls of rock crystal and other stones with a reputation for healing properties are preserved in various Scottish families. Lists

of remedies used among the Scottish peasantry were published in the seventeenth and eighteenth centuries, some of these remedies, made from plants, appearing to be natural and salutary, but many were extremely disgusting.

Prof. VICTOR GOMOI (Rumania) included under the name "medical folk-lore" the whole of popular sanitary science—a science which was reflected in popular beliefs, habits, superstitions, prayers, incantations, witchcraft, charms, and various medical and surgical practices. He insisted that if more attention had in the past been paid to medical folk-lore, medicine would have avoided many useless deviations in its evolution, and scientific medicine would have reached a more advanced point than it has done to-day. Popular science in the Balkan countries has given to scientific medicine many priceless therapeutic elements: baths, variolisation (ancestor of vaccinothrapy and even of vaccination itself), cupping, and a vast number of vegetable and other remedies (opium, squill, petroleum, &c.) to which "medical science" has done no more than verify their action by experiment and perfect their mode of use.

Dr. P. STOLANOFF (Bulgaria) described the popular beliefs of his country in regard to various diseases, their cause and treatment, with the forms under which the medicinal plants are administered in each case.

Prof. SÜHEYL ÜNVER gave a similar account of popular beliefs in Turkey, and other speakers for Switzerland, Scandinavia, and Italy.

This section was followed by papers on the history of medicine and medical sociology contributed by Dr. HENRY SIEGIST (Johns Hopkins University) and others. An exhibit of the Wellcome Historical Medical Museum included illustrations of Arabian surgical instruments from the early fourteenth century; MSS. of Abulcasis; examples and replicas of other early medical MSS.; objects of historical ophthalmology, with a section devoted to the evolution of spectacles. Several dioramas were shown, including a view of the Hospital of Santa Cruz at Toledo, as it appeared in the sixteenth century.

Visits were arranged to a large number of institutions of scientific, historic, artistic, or archaeological interest, including a day at Toledo.

AUSTRALASIA

(FROM OUR OWN CORRESPONDENT)

THE VISITORS TO MELBOURNE

THE 103rd annual meeting of the British Medical Association, the first meeting of its kind in the Southern Hemisphere, has been attended not only by many world-famous medical men and women from Great Britain, but by distinguished representatives of medicine from Holland, China, Japan, India, Ceylon, and most parts of the British Empire. The contacts brought about by such a gathering will be of value to all, whilst the election of an Australian doctor to the presidency is much appreciated here.

Most of the visitors from Great Britain travelled across America; one party crossed Canada, the other the United States, the latter spending two days in New York and one in Washington, with shorter halts at Chicago, Albuquerque (New Mexico), and Los Angeles. A special air-conditioned train was made available for the party on this transcontinental

journey. The *Aorangi*, with the northern party on board, was diverted to San Francisco to pick up the southern party, and enjoyable days were spent at Honolulu and Suva. At Suva, a special display of fire-walking was given and great interest was taken in the medical school for training native doctors. The party, which numbered 250, arrived at Auckland in New Zealand on Sept. 2nd. Many took the opportunity to visit Rotorua, where they received enthusiastic civic and Maori welcomes. The *Aorangi* reached Sydney on Sept. 6th, when a civic welcome was given and the party were entertained at luncheon by the New South Wales branch of the B.M.A., and left next day for Melbourne. Large numbers of members were brought also from New Zealand by the *Wanganella*, and many arrived via Suez. The attendance at the congress of members and their families is estimated at between 3000 and 4000.

It may be mentioned here that at the annual dinner Mr. H. S. Souttar, chairman of the representative body, suggested as a permanent memorial of the visit the inauguration of a federal medical research endowment fund in Australia. It was announced later in the week that the Federal Government, acting on this suggestion, are taking steps to form an Australian Medical Research Council.

There can be no doubt about the success of the congress, which reflects the greatest credit, not only upon the central organisation in London, but particularly on the members of the Victorian branch of the Association, who have been untiring in their efforts.

PARIS

(FROM OUR OWN CORRESPONDENT)

A NATIONAL CENSUS OF DOCTORS AND DENTISTS

A FEW months ago the Commission de l'Hygiène de la Chambre des Députés, of which Dr. Nast is a member, issued a report on the need for a national census of the doctors and dentists legally qualified to practise in France, and this recommendation has now been incorporated in what is commonly known as the Nast law of July 26th, 1935. Every properly qualified doctor and dentist practising in France will have to show his or her diplomas before Jan. 27th, 1936, and for the bona-fide practitioners who have lost their papers this law will be a source of some temporary inconvenience. But the people who will and who are meant to suffer most are the unqualified practitioners who have hitherto succeeded in posing as doctors and dentists, thanks to the lack of a central national register.

FRAUDULENT MEDICAL CERTIFICATES

Another new legal enactment concerns the medical practitioner who in the past has promoted malingerer by the issue of misleading medical certificates. In a letter dated August 8th, 1935, addressed by Monsieur Laval to the President of the Republic, it is pointed out that, in the present state of the law, the authorities are unable to bring before a court of justice the doctor who issues misleading medical certificates enabling their recipients to claim undeserved pensions or grants. Accordingly, Monsieur Laval has included among his emergency decrees a modification of the first paragraph of Article 160 of the Penal Code, which henceforth reads: "Every doctor, surgeon or other medical officer of health who, to favour someone, certifies untruthfully to diseases qualifying for dispensation from public service or for the receipt of a pension

or grant from the State or a public body, shall be punished with imprisonment for a minimum of one year and a maximum of three years." This decree will have to be ratified by Parliament, but whatever its ultimate fate, it should have a quite definitely inhibitory action on the light-hearted dispensing of documents certifying to the reality of unreal diseases.

CONTROL OF MEASLES

A recent epidemic of measles in Saint-Étienne, a French town of some 200,000 inhabitants, is the subject of an informative study in the *Revue d'Hygiène et de Médecine Préventive* for October. The author, Dr. Poulain, the town's medical officer of health, has collected and classified the records concerning measles in Saint-Étienne since 1891, and he has found that in all but 5 of the 44 years under review there have been outbreaks of the disease. Their average duration was nine months, and after attaining their maximum in March and April they usually petered out in July or August. Those of greatest severity were usually seen at three-year intervals. Since 1891 there have not been two successive years without an outbreak of measles in Saint-Étienne, and throughout this period and until 1930 there has been little change in the mortality from its pulmonary complications. There was thus a useful and reliable background by which to judge the efficacy of the measures Dr. Poulain put into force in the epidemic which he describes, and which began in November, 1933, and lasted during the first seven months of 1934.

The first to suffer were some 70 soldiers of the garrison. The deaths of 7 of them created a stir which facilitated the educational and administrative measures Dr. Poulain proceeded to promote. His two main principles were as far as possible to prevent children under the age of two from contracting measles and to avoid its complications—notably those of the respiratory tract—in children over this age. For children under two he sought to prevent infection by discouraging their attendance at welfare centres and similar institutions designed for their welfare but liable to become foci of disease. For children over the age of two, he considered it useless to close the schools, but he made the parents realise that a child with coryza should at once be kept at home. For children of all ages his advice was that hospitals should be given a wide berth. Such festivities as public Christmas tree parties were suppressed. The serum of convalescents was available in quite inadequate quantities, for though 17 of the aforementioned soldiers served as donors between the seventh and ninth day of desquamation, attempts to induce the civilian population to serve in the same capacity proved remarkably futile. But the serum (what there was of it) proved a great success, no complication such as bronchitis being observed in any of the cases thus treated even when they were given the serum comparatively late. What was, however, most impressive was the remarkable fall in the mortality of this epidemic compared with that of earlier outbreaks. The mortality from the complications of the respiratory tract was 11.3 per thousand as compared with 32.3 in other years of severe epidemics; indeed it was even less than the corresponding mortality in the years without any definite epidemic of measles. This achievement is attributable to the combination of measures adopted and not to any one of them in particular; and credit should be given to the lay press for its success in transmitting instructions to parents to keep their children at home when the weather was too cold

for them. Dr. Poulain concludes with the calculation that though his measures were simple and improvised, they saved at least 50 lives in infancy, and as many others between the ages of one and five years.

ANTHRAX

Anthrax is notifiable in France when it develops under industrial conditions but not otherwise, and the available figures give a false impression of its rarity. Even so, there seems to be no tendency towards its abatement; the annual average for the 24 years 1910-33 is 43, with a case-mortality of 11.5 per cent. Dr. E. Agasse-Lafont (*Presse méd.*, August 14th, 1935, p. 1291) reports that the Commission d'Hygiène Industrielle has been discussing the course to be recommended when a wound is suspected, without being convicted, of being infected with anthrax. Should an aseptic dressing be applied, or should antiseptics, with tincture of iodine, be used? The evidence in favour of the tincture of iodine ritual was singularly unconvincing; and if the inclusion of iodine in standard first-aid outfits recommended to industry by the Minister of Labour was still upheld, it seems to have been countenanced as a gesture rather than for any more material motive. Asked by the Ministry to give his opinion on the subject, Dr. Perrin, with an experience of more than 300 cases, wrote: "At the Saint-Denis Hospital, as soon as anthrax is diagnosed, treatment with serum is instituted, and we can say that at present deaths are almost rarities. Painting with tincture of iodine is as useless as it is ineffective." The instructions issued by the Pasteur Institute with its serum state that "local treatment (cauterisation, injection of iodine) may be dispensed with when serum is given"; and when asked to give an opinion on this subject, the sero-therapeutic service of the Institute replied last December with Delphic diplomacy that "local treatment cannot be injurious. The doctor in charge must decide whether it is necessary or not." Dr. Agasse-Lafont endorses this formula as a faithful representation of our knowledge, and goes on to emphasise the supreme value of general treatment, notably serotherapy.

ADVANCES AND THEIR APPLICATION

A subject raised by Dr. Batier, of Strasbourg, last year is of perennial interest: how best may we introduce new forms of treatment to the medical profession so that their benefits are soon gained by the public? The alternative policies he recognised were the dictatorial and the persuasive. The first conceives of the public health authorities as a kind of link between the more advanced members of the profession and those whom character or circumstances cause to lag behind; the duty of these authorities would be to "recommend," in the administrative sense, whatever measures were approved by the élite of the profession. Batier provided a telling illustration of his meaning when he referred to artificial pneumothorax—advocated for years, and even decades, by the expert but ignored by the rank and file. And though it is true that the consultant sometimes shows obtuseness where the general practitioner has a quick grasp of realities, there have certainly been occasions when much time had been lost in making use of useful advances. More hopeful, however, than Batier's dictatorial solution is his alternative: teach the younger men, and in due course their therapeutic achievements will compel emulation by the older generation. Perhaps. This happy vision of the young teaching the old must carry conviction, at any rate to the young.

POST-GRADUATE LECTURES

Our series of summaries of lectures given at the recent post-graduate courses in London teaching schools is continued this week. Dr. Lightwood, Dr. Lloyd, and Mr. Tudor Edwards all spoke at Westminster Hospital, the addresses of the two last being delivered consecutively.

SOME POINTS IN THE DIAGNOSIS AND TREATMENT OF DISEASES IN CHILDHOOD

(DR. REGINALD LIGHTWOOD)

General approach to the patient.—On first seeing the patient we should take the history; then make our examination and complete it before doing the real thinking which leads to diagnosis. Parents hang attentively on the questions the doctor puts and attach great importance both to what we ask and our method of asking it. It is a mistake to adopt a menacing, third-degree, Scotland Yard attitude. Always welcome a child patient with a smile; he is meeting somebody strange and is apprehensive. A children's doctor must not find it painful to smile and to be friendly to his patients. The child who screams down the consulting-room is usually a spoilt child, but never tell the mother that her child is spoilt, or you will be unlikely to see her again. Take her aside and then lead her spontaneously to suggest that her child is a bit spoilt; this can be done with a little tact. Never criticise her in front of the child; it is bad for home discipline.

History taking.—The secret of success is to adopt a routine of questions, which needs a little trouble before it becomes second nature. Intelligent questions, besides giving the information you want, will favourably impress the mother with your competence. For instance, in the case of an infant, ask whether full-term or premature; the weight at birth; the weekly gain; the feed; the interval between feeds, and whether both breasts are used at each feed or alternately; whether the baby takes the breast well or interrupts his feed for any purpose such as failure to breathe through the nose; whether he brings up wind successfully after feeding. Then ask about the stools; how often passed; are they formed; what is their consistency and colour; is there any flatus? Ask the questions quickly enough so as not to waste time, but not so quickly as to muddle the mother.

In dealing with a child I treat him almost as if he were grown-up and never patronise or talk down to him. It is important to get his confidence so that he will not back away and have to be pursued round the consulting-room. Come to the examination gradually. After a general glance, start by a friendly stroking of the abdomen, then palpate each part of it in a definite order. I always start with the left iliac region, then the left hypochondrium, and so, anti-clockwise, to the right iliac fossa. Children do not always like percussion and the stethoscope, and these should be used gently and tactfully. Always complete your examination, including the fauces and urine, and do not omit any part of it because the diagnosis already seems clear.

Value of the sleeping pulse-rate.—The sleeping pulse-rate, plotted on the same chart as the day pulse-rate, is essential in the examination of certain cases of heart-trouble. In the normal child it should be 10 to 15 beats slower than the day pulse. In

severe rheumatic carditis the two rates approximate and are both faster than in health. The sleeping pulse-rate will give an idea of when the patient can be allowed to get up; for when the nocturnal tracing retrains again from the day tracing, assuming the normal interval, and the tachycardia is disappearing, then there is definite clinical improvement. Similarly, narrowing of the interval and nocturnal tachycardia give warning of a relapse. The sedimentation-rate is another useful indication of when carditis ceases to be an active inflammatory process, for with improvement it becomes less and then returns to normal, more or less in step with the sleeping pulse. The sedimentation-rate is also raised in articular rheumatism and infection of the tonsils, nephritis and pneumonia, and so forth, but, curiously enough, not in chloria.

Nervous tachycardia.—Some nervous children complain of vague pains, are easily tired and pale, show tachycardia, thumping of the first count at the apex, and a suspicion of a systolic bruit. In this way rheumatism may be simulated. The sleeping pulse-rate will give the diagnosis between early rheumatic carditis and this nervous tachycardia, for in sleep the nervous influences are not at work and the pulse-rate is therefore normal. The child who is suffering from tachycardia and neurovascular debility is usually brought to the doctor because he is pale; the cause of this pallor is often fear or fatigue. After a few minutes in front of the fire with a picture book his colour often recovers. The pallor of anaemia does not disappear in this way. In this neurovascular syndrome there may be postural albuminuria at night and a day specimen should be taken. Dyspepsia is also a common complaint. In treatment a régime should be sketched for the parents; fatigue should be avoided but stimulating exercise encouraged. Cold or cool baths are better than hot ones. The child should not be taken away from school, except possibly for the afternoon if conditions make for too much strain. One hour's rest during the day, lying down, is important. As a tonic, a mixture of hydrochloric acid, gentian, and nux vomica may be given, but not iron.

Anaemia.—In anaemia the pallor is best judged from that of the palms, which can be matched with those of the physician. A guiding principle in the treatment of anaemia depends on the colour-index; if it is low, iron will probably be useful; but not if it is high. Iron-deficiency is, however, by far the commonest cause of anaemia. Reasonably big doses of iron are required; ordinary reduced iron mixed with sugar is invaluable. Even a premature infant can take it, and the dose for a six months' child is gr. $\frac{1}{2}$ and for infants over a year grs. 2. The saccharated sugar of iron is useful, as is the proprietary preparation Ferrodic. Choose ferrous preparations and avoid organic compounds.

Drug tolerance.—Infants tolerate some drugs very well, especially belladonna. This for instance is a sheet anchor in nervous enuresis, in which some kind of homely suggestion also helps by increasing confidence. The commencing dose of belladonna is 5 minims of the tincture, increasing to 10 and then to 15 minims until the enuresis is controlled or symptoms of intolerance appear. If this drug is successful, continue it for two months and then diminish it gradually. Chloral is the safest and best drug for infants with convulsions; they are tolerant to it and as a single dose, grs. 5 can be given per rectum. Before starting to treat epilepsy the physician should

make sure of his diagnosis and that the fits are regularly recurring. Potassium bromide, grs. 5 three times a day, should be continued without intermission until the next fit, when it should be increased, and so on until no more fits are occurring. The dose ascertained in this way is continued for two years. The bromides of course are not always successful in epilepsy, but should receive first trial.

MEDICAL TREATMENT OF PULMONARY TUBERCULOSIS

(DR. W. E. LLOYD)

THE successful treatment of pulmonary tuberculosis depends upon one factor more than any other, and that is early diagnosis. Although the outlook for the tuberculous patient has improved greatly since the wider use of methods aimed at resting the diseased lung by collapse therapy, I think that further improvement depends upon earlier diagnosis.

Pulmonary tuberculosis begins in the majority of cases as a localised lesion in one area of one lung, and it should be our aim to attempt its diagnosis in this stage. Unfortunately, however, such localised disease is often so silent and insidious in its development that any disturbance of health to which it may give rise is so trivial as to pass unnoticed by the patient. How then can more early cases be diagnosed? This can be done by regarding every patient, especially a young adult, with symptoms of chest disease as a possible case of tuberculosis. Such a case calls for the most complete investigation. A detailed history may reveal important facts—e.g., contact in childhood with a case of tuberculosis, or a history of pleurisy. Hæmoptysis is a symptom which calls for special mention, for it is often the first indication of tuberculosis. A patient who coughs up blood rarely fails to consult a doctor, and it is therefore not surprising that many cases owe their early diagnosis to the occurrence of hæmoptysis. Physical examination of the chest usually proves negative in the early case. The patient should be encouraged to produce a specimen of sputum for examination for the presence of tubercle bacilli. The most important investigation of the suspected early case is a good radiogram of the chest, and there is much truth in the remark that the earliest lesion of pulmonary tuberculosis is seen and not heard. The question is often asked if early tuberculosis can be diagnosed by radiography alone. I think the answer is yes if the complete data of the case are considered in conjunction with the radiogram. Unfortunately, by the time an X ray film has been taken, the case can no longer be called an early one; but by insisting on radiography of the chest for every patient with chest symptoms, as soon as these develop, more early cases will be diagnosed.

Having found the early case, what are the principles which govern its treatment? The pathogenesis of tuberculosis in a young adult is obscure and little is known as to its precise nature. The development and increase of a tuberculous lesion in the body indicates that the defensive processes have failed, and it is hoped failed temporarily. The treatment of such a case is directed to the general health of the patient with the object of increasing immunity, and the best way to do this is by advising a period of rest in bed. Treatment by this means is the basis of the successful treatment of the early case.

As soon as pulmonary tuberculosis has been diagnosed it is important to explain to the patient that adequate treatment of the early stage of the disease

is essential and the coöperation of the patient must be obtained. At least two months' rest in bed should be advised, and this should be commenced as soon as possible after the diagnosis has been made. Rest in bed calls for adequate nursing facilities and more hospital or sanatorium beds are necessary for the bed treatment of the early case. Signs of toxæmia, as indicated by raised temperature and pulse-rates, usually soon disappear, and estimation of the blood sedimentation-rate at frequent intervals is a helpful guide in determining the degree of toxæmia present. If toxæmia persists in spite of rest in bed (and this to be efficient must be rigidly enforced), the question of other methods to help the patient should be considered. Of these the most important is that of resting the affected lung by artificial pneumothorax. In every case of unilateral tuberculosis this method of treatment must be discussed. Opinions differ as to the best time to commence collapsing the lung. There are many authorities who advocate that a pneumothorax should be attempted as soon as the diagnosis of unilateral tuberculosis has been made, even if signs of toxæmia are absent. I do not share this view, and in the early case I think it advisable to concentrate on general treatment rather than on the local condition of the lung, and recommend (as indicated above) at least two months' rest in bed. At the end of this time, another radiogram should be taken and compared carefully with the previous film. Often definite improvement will be observed. The patient is then allowed out of bed for gradually increasing periods until at the end of another month he is ready for the next stage in treatment—namely, sanatorium régime. Here the arrest of the disease as shown by radiography is subjected to the test of increasing exercise, and the sanatorium should be regarded chiefly as a place where the patient's reaction to a more active life can be watched accurately. In many of these early cases he is well enough to return to work after six months' treatment, but the importance of supervision of the patient after leaving the sanatorium cannot be over-emphasised. The case should be kept under observation for at least two years and control radiograms taken every three months. Such is the routine treatment of the early case in which the original lesion had improved radiologically after two months' rest in bed. If in spite of rest there has been no such improvement, an artificial pneumothorax should be attempted. The above remarks apply only to the patient in whom the disease is localised to a limited area of one lung. The next type of case to be considered is the one in which there is extensive unilateral disease, and this forms a much larger group than the type so far described. Rest in bed, together with artificial pneumothorax, is the ideal method of treatment. In these cases the best results of pneumothorax are obtained after a preliminary period of three or four weeks' absolute rest. As a rule, there will be evidence of cavitation in the radiogram. A pneumothorax may not collapse a thick-walled cavity, and the case with an uncollapsed cavity in a partially collapsed lung calls for the coöperation of the surgeon. Good results may be obtained by cauterisation of adhesions or by paralysis of the diaphragm after evulsion of the phrenic nerve.

If one lung is extensively infiltrated by tuberculosis it is more than probable that the other lung is not entirely free of disease. In the early days of pneumothorax treatment it was not considered advisable to attempt it if there was any disease in the other lung. This depends upon the extent and

type of disease in that lung. If the radiogram shows apical disease with evidence of fibrosis this is not a contra-indication to collapse the badly affected lung.

The success of pneumothorax treatment depends largely upon the care with which the case is supervised after the patient has left the sanatorium and is attending for refills. X ray screening of the chest is necessary before each refill. By this means it is possible to maintain an almost constant degree of collapse and displacement of the mediastinum is avoided. In this way also will early collections of fluid in the pneumothorax cavity be diagnosed. Fluid occurs at some time or other, in small or large amounts, in nearly every case. Fluid which remains sterile and free of tubercle bacilli may be left unless it is so large in amount as to cause dyspnoea when it should be replaced by air. Fluid, however, may become purulent and a pyopneumothorax gives rise to the greatest anxiety. Fortunately it is uncommon, but it must be kept in mind as one of the complications of pneumothorax treatment. Another great disappointment is the case which has done well after treatment by this method and in which a fresh area of disease develops in the other lung. This development calls for further rest in bed with the object of preventing the new lesion from spreading. The value of sanocrysin or other gold preparation has been proved in such a case but it may be necessary to collapse the recently affected lung and allow the other lung to re-expand gradually. These points are mentioned to indicate the importance of accurate supervision of pneumothorax treatment. The general health of the patient must also be watched closely, and the amount of rest necessary during the twenty-four hours assessed according to the patient's condition.

It should always be remembered that pneumothorax treatment may not be possible owing to the presence of pleural adhesions, and it will save much disappointment if the patient is told that the treatment may not be successful. If pneumothorax is impossible and the disease is unilateral the question of surgical methods of collapse, including apicolysis and thoracoplasty, should be considered.

The next type of case to be discussed is the one in which there is bilateral disease when first diagnosed. Rest in bed is again the most important method of treatment and is governed by the degree of toxæmia present. If the latter persists the administration of gold salts is worthy of trial, but only if there is no evidence of enteritis and the urine is free of albumin. Small intravenous doses of 0.1 g. sanocrysin given at weekly intervals over an extended period is the best method of administration. Some authorities advise the use of bilateral artificial pneumothorax in these cases but the results are disappointing. The results of treatment by prolonged rest in bed often exceed expectations and an attitude of optimism towards the patient is justified.

Finally, the principles of treatment of senile tuberculosis. In late life toxæmia is usually absent, and treatment should be on general lines. The dyspnoea which is often a conspicuous feature of these cases calls for a life of restricted activities. Active treatment in the form of collapse therapy is not to be recommended. The condition may be associated with chronic bronchitis and emphysema, and the tuberculous basis of the disease may be overlooked until the sputum is examined. From the public health point of view these cases are a fertile source of infection and great care must be taken to prevent spread of infection to younger members of the household.

In conclusion, I should like to repeat that the successful treatment of pulmonary tuberculosis depends upon its early recognition; and as facilities for radiological examination of the chest are increasing, we may hope to meet with more such cases if it is remembered that radiography is essential for early diagnosis. If the disease has become well established the question of some form of collapse therapy in conjunction with adequate rest has to be considered and the coöperation of medical and surgical treatment gives results which have undoubtedly improved the present-day outlook for the patient suffering from pulmonary tuberculosis.

SURGICAL TREATMENT OF PULMONARY TUBERCULOSIS

(MR. TUDOR EDWARDS)

THE objects of surgical treatment of pulmonary tuberculosis are rest, immobilisation, and relaxation.

They may be used to supplement measures such as artificial pneumothorax, which has already been mentioned, and which may be only partially successful or completely impossible as a result of partial or complete synthesis of the pleuræ. In the former case it is natural to expect adhesions to be present over the active areas of disease in the lung, and for this reason the value of the treatment may be restricted owing to the adhesion preventing collapse of an underlying cavity. If these have been present for some time it is advisable to attempt to divide them and allow the cavity to collapse. Open operation has gone out of favour and the operation is performed by introducing, under local anaesthesia, a thoracoscope into a convenient intercostal space. It will generally be found that these adhesions are more numerous than the radiogram would suggest, but those of a fibrous nature, if not too extensive, can be divided by a cautery introduced through another intercostal space. Any damage to lung will lead to complications much more serious than the condition for which the operation is undertaken, and when there is serious risk of this in the division of the band it is well to consider other measures to produce collapse of the cavity.

Phrenicectomy is a relatively simple procedure, although serious complications have been described, largely due to errors of technique. This simplicity naturally produced an excessive enthusiasm which has more recently been followed by an excessive condemnation. The value of the operation depends upon the paralysed diaphragm rising, relaxing and resting the lung. It has definite value in the control of symptoms and a less limited value in the control of the disease. As it is now often performed as a temporary procedure by crushing the main phrenic nerve and dividing the accessory branches, it possesses many of the advantages of artificial pneumothorax (A.P.). In combination with A.P. it will enable cavities, strung between apical and diaphragmatic adhesions, to collapse. Certainly it is of value at the termination of artificial pneumothorax treatment, especially for cavitary disease, where the re-expansion of the lung to the full hemithorax may be impossible and will result in fluid formation, deviation of the mediastinum to the affected side or reopening of the cavities and reactivation of the disease. In soft-walled apical cavities, which have closed after temporary phrenic interruption, the paralysis may be made permanent. In cavitation of the lower lobe closure of the cavity will often follow

the operation, particularly in cases where generalised adhesions prevent the induction of pneumothorax. In patients with extensive fibro-cavernous disease, phrenicectomy as a sole curative measure is of no value, and it is its employment in this type of disease that has led to its general condemnation by some people. Its value in hæmoptysis is debatable, and is more likely to help the patient with repeated small hæmorrhages, and it is of more danger than value in the larger hæmorrhages.

In controlling diaphragmatic pain either during or apart from pneumothorax, the operation has a distinct place. Finally, in assessing its value it is advisable to ask oneself whether it is intended to act as a curative measure or as a means of controlling symptoms and to judge the results accordingly.

Apicolysis and Thoracoplasty.—The larger surgical procedures, such as apicolysis and more particularly thoracoplasty, depend upon the patient showing evidence of some resistance to the disease, and are therefore measures which are largely reserved for the more chronic stages. They are employed particularly in patients with fibro-cavernous or fibrous disease in which there is deviation of the mediastinal structures, as seen radiologically, to the affected side. Where the collapse of the lung to be attained is a localised one such as in apicolysis or localised thoracoplasty, the condition of the "better" lung is not so important as in the complete thoracoplasty; in fact, both the localised operations can be carried out successfully bilaterally. Therefore, active disease in the "better" lung except possibly a small apical focus is usually taken as a contra-indication to complete unilateral collapse by thoracoplasty.

Laryngeal disease is not a contra-indication unless very extensive, nor is unilateral renal tuberculosis; occasionally even intestinal tuberculosis of not too severe a nature will permit the operation and clear

up with the pulmonary improvement. Technical problems I do not intend to put before you, although they are of considerable importance; but the operation of apicolysis necessitates the introduction of a foreign body—i.e., paraffin wax—into the space stripped up between the parietal pleura and the chest wall, and this, like other foreign bodies, is not always well tolerated by the tissues, and may subsequently discharge on to the surface or even into the pulmonary cavity. In general, I reserve this operation for older patients with rather more rigid chest walls, who tolerate a thoracoplasty less well.

As regards the localised apical thoracoplasties they require a much more extensive resection of the individual ribs, although the number resected is usually confined to four, five, or six.

Tuberculous Pyothorax.—Finally, a few words about tuberculous effusions. They are of two main classes: (1) where the underlying lung is unaffected and (2) where there is disease in the underlying lung. These effusions may be serous, tuberculous purulent, or tuberculous purulent with secondary pyogenic infection. The last group is the most serious and is often fatal. As regards the tuberculous purulent group without disease in the underlying lung, aspiration and lavage will often clear them up entirely by expanding the collapsed lung; if, however, this is diseased, expansion may result in reactivation, and it is advisable to perform a thoracoplasty relatively early. In the secondarily infected group, aspiration and lavage may not control the infection and intercostal drainage will be required. If the patient makes sufficient progress to justify the measure, thoracoplasty is indicated when the patient is sufficiently fit, although complete closure of the extensive pyothorax cavity is often difficult to attain.

OPENING OF THE MEDICAL SCHOOLS

THE Minister of Health spoke at Guy's Hospital last Tuesday, Sir Walter Moberly at the Royal Free Hospital on Oct. 1st, and Sir Francis Acland at the Royal Dental Hospital on the 4th. The passages printed below are extracts from their addresses to the students at the opening of the session.

THE PHYSICIAN AS MAN OF THE WORLD

By SIR KINGSLEY WOOD, P.C., M.P.

MINISTER OF HEALTH

I NEVER think of Guy's but I recall Bob Sawyer, student at Guy's, associate of the immortal Pickwick Club, and jolly good fellow. Mr. Pickwick had a high opinion of medical students. "There's a couple of Sawbones downstairs" said Sam Weller. "I am glad of it" said Mr. Pickwick. "They are fine fellows; very fine fellows; with judgments matured by observation and reflection; tastes refined by reading and study. I am very glad of it."

I am sure the world was the better for Bob Sawyer. If he leaves a lasting impression of imbibing much of his wisdom through a bottle-neck, we must remember that fiction is selective and that in the "Pickwick Papers" we see him for the most part in what might be called his unbuttoned hours of ease. Of Bob's work as a surgeon in India—which he reached via Carey-street—we know nothing,

except that he resolved "to try a little abstinence" and "has since been doing well." We remember him, not for his technical skill, though I have no doubt that was, ultimately, considerable, but as an associate of the Pickwick Club, a good companion, a man among his fellows—a theme to which I shall return.

Most of you who are now students or have just qualified will, I suppose, take up general practice, and to you I would like to address myself particularly, for two reasons, one the perfectly good democratic reason that you are the majority, and the other that, whatever the importance of ancillary services, an up-to-date and progressive corps of general practitioners is essential in our organisation for the maintenance and improvement of the public health. The health of a nation is the very basis of its well-being. A low standard of public health means waste and burden. In the fight for better health the general practitioner is in the front line.

I will not talk to you of the 'ologies—biology, physiology, bacteriology, and the rest; your teachers and indeed any one of you yourselves could do that better than I. I am but the layman looking at the doctor. Yet I am temerarious enough to think that I have something to say about your preparation for your great task. Those here who guide you, lead you, inspire you, propel you—what you will—will concentrate, and rightly, on the technical side of your art, diagnosis, therapeutics, how to set a

limb and dose a fever. But in formal lectures, clinics, and so on, time is always at their heels. They will tell you, being honest men, but they will not have time to tell you often, and they will have hardly any time at all to see that you profit by the advice, that your education should not be limited to medicine, surgery, and midwifery, that a much wider interpretation should be given to the art of medicine, that the love of man should be linked up with the love of the Art.

The doctor-priest of ancient times professed knowledge of all the mysteries of life and death. Even up to fairly recent times disease was attributed to evil spirits which had to be placated or cast out. It is not so very long since Parliament in an Act intended "for the avoiding of sorceries, witchcrafts and other inconveniences" entrusted medical registration in London to the Bishop and to the Dean of St. Paul's. To-day, however, the mystic and the empiricist have given place to the scientist. Reason reigns in the place of authority. The doctor is no longer a priest or a magician. He no longer dresses himself up, at any rate in civilised countries, in the magician's mask of the "medicine-man" or the medieval plague doctor. He has even in large measure discarded the silk topper. But an element of magic is still present, and blessed alike in works and in pocket is he who possesses it most. This remnant of magic is what has been described as the "bedside manner." I should prefer to phrase it as the human sympathy of the doctor, and it is probably more important than nine-tenths of the drugs in the materia medica.

Not that I wish to under-rate the value of some drugs at some times. Indeed, seeing that the inventor of Dover's powder was the same Thomas Dover who was largely responsible for your founder making his fortune out of the South Sea Bubble, I hope I should not be so foolish as to cast any doubt within these walls on the virtue of that particular specific. I think, however, that it is not without interest that some years ago an analysis of prescriptions in England and in Scotland showed that the Scots and the English throve to some extent on different mixtures, the Scots, incidentally, managing to get along with less of them than we did.

I have used the term human sympathy as a convenient phrase. What I want to emphasise is that a patient is a man and not a machine—a fact which it is quite easy to forget. "One man's meat is another man's poison" is true in medicine not merely as regards drug tolerance but as regards the whole attitude of the physician to his patient. You must have knowledge not only of medicine but of many men. Never forget that morbid processes may work in many different ways. Your patient's illness is related, and intimately related, to the conditions of his life, his work, his games, his diet, his friends, his mode of thought, his upbringing. To treat his illness you must be capable of understanding the whole complex which is the man. How are you to do that? By knowing much of many men. By going among men, of all kinds. By helping in affairs on local bodies. By having, acquiring, and maintaining a cultural background and not being a mere technician.

The physician, in short, must be a man of the world and of affairs. Let him learn about bones, morphology, pathological processes, and so on, and let him learn them well, but let him always remember that he is treating not a universal robot but a human being, and that his treatment will be better and more

effective the better he himself is as a human being. And just as it is important that your technical knowledge should keep pace with the times, by occasional post-graduate refresher courses as well as reading and practice, equally is it important that you should keep up the wider interests and resist, as far as you can, and for as long as you can, the narrowing process which sets in inevitably as youth travels further from the east. You have my fervent wishes for your success in the hard but noble path on which you have entered, and I hope I have your good will in mine.

THE PURPOSE OF UNIVERSITY TRAINING

By SIR WALTER MOBERLY, D.S.O., Hon.D.Litt.

CHAIRMAN OF THE UNIVERSITY GRANTS COMMITTEE

At the beginning of a new university session it seems proper to invite you to think of some of the aims of a university training, and I am going to take a very homely text:

If all the good people were clever,
And all clever people were good,
The world would be better than ever
We thought that it possibly could.

But somehow it's seldom or never
The two hit it off as they should;
For the good are so harsh to the clever
And the clever so rude to the good.

So friends let it be our endeavour
To make each by each understood;
For who can be good as the clever?
Or clever so well as the good?

The implication of those lines is that people fall into two different classes which should not be estranged from one another—indeed cannot do without one another. It is obviously the business of a university training to train the mind in the direction of cleverness. But cleverness is not enough, and goodness is not enough, and the real business of a university is to try to produce that fusion of cleverness and goodness which I should call wisdom.

In the first place, on the more intellectual side you come here to try to acquire that mastery of your profession which distinguishes the professional from the amateur. Further, you do not come merely to serve an apprenticeship to your craft; for the great characteristic of modern medicine compared with olden days is that medicine is now more securely based on science. The result of this change is that in medical matters the difference between the expert and the quack is generally understood and is regarded by the public as important, and it seems to me that in this respect the medical profession is in a much happier position than others—teaching and politics for example.

To-day, moreover, in every university and college we have such active participation in discovery and research as makes the whole of your teaching much more real. "To learn from one who is himself occupied in learning is like drinking running water. To learn from one who has already learned all he is to teach is like drinking 'the green mantle of the stagnant pool'."

On the other side it is most needful that you should widen your sphere of interest. You come to a university not merely to prepare yourself for your job but to prepare yourself for public service. Can these wider things be taught? Physics, chemistry, and medicine can be taught; but can goodness and

wisdom be taught? We are living in a crisis of civilisation, when the general movement of world affairs has got out of human control. The danger of war, for example, comes in the main from voluntary human actions. Nobody wants war; but through the absence of sufficient understanding things have got out of control of human beings. What are the universities of the world doing about it? Are they trying to turn out graduates who will have a larger portion of wisdom and judgment for the want of which the world is in danger of perishing?

But there is another difficulty. Supposing universities are paying their best attention to these tasks, we still come up against the paradox that the world does not set a very high value on the university-trained mind. If it were proposed to-morrow that the present Cabinet should be replaced by the professors of political science at the British universities, not many would be in favour of the proposal. This general opinion is based on the undoubted fact that people who have had academic training do not always make good practitioners. If university graduates are to be of use to the world they have got to consider not merely principles and the deductions from them, but the application of these things to current affairs. On the other hand there is something in the university type of thought the practical man cannot really do without; for the merely practical attitude is apt to betray us unless the world remains constantly much the same. It is for the want of the fusion of the two outlooks—the academic and the practical—that the world is largely going wrong. But if as a whole the universities are not making their proper contribution the fault, I think, lies not so much with organisation or authorities as with the students who do not always attempt to get out of university life what they ought to get.

I am sure one is missing a great deal of what university life ought to give unless one gets all the contact one can with other students: "get acquainted with your neighbour; you may like him." Unions, hostels, and the like provide opportunities for that kind of mixture. I would also advise you to take all the opportunities you can get of informal contact with members of the staff outside the lecture-room and laboratory; for I find there is nothing that so stands out in my mind as certain chances of contact with men whom it was an education to meet in an informal way. In the practice of medicine later on the human factor must be all-important; you are always meeting human beings at critical points of their lives. You must therefore learn to understand other people, to put yourselves in their places; but you must also learn judgment—to learn, that is, to try to make up your mind on something about which you are not sure. All of us must be ready to judge, in subjects which are not our own primary subjects, between the expert and the quack.

One last and most important point. I should say that any graduate who leaves a university without having made progress towards acquiring a philosophy of life has missed part of the purpose of university training. It is not the business of the university to tell you what your philosophy of life should be, but it is its business to help you to find your own. From the point of view of training for life, for producing that wisdom which is the real end and aim of a university career, the failure to attain a philosophy of life is a fatal failure. Cleverness by itself is not enough and goodness by itself is not enough.

THE DENTIST'S MIND AND FINGERS

By SIR FRANCIS DYKE ACLAND, Bt., P.C., M.P.
CHAIRMAN OF THE DENTAL BOARD OF THE UNITED KINGDOM

I NEVER see students unless I attend the opening of a dental school, or a new department of one to which the Dental Board have contributed. But I see a good many of them in the stage just before they become students—or don't, as the case may be, the event depending on a short conversation I have with them at the offices of the Dental Board, with our treasurers listening and helping me in very difficult decisions. And if I try to tell you what, in a short ten minutes, I try to find, it may indicate the sort of qualities which seem to me likely to make a student a valuable member of the profession.

"Character, keenness, individuality" express it fairly well. I know that many of you have had to cram for the Higher Certificate examination, one of the most pestilent hindrances to good secondary education which we have, and have hardly had time to develop any interests except in the subjects contained in the syllabuses which that examination covers. And we try to make allowances for that. But one wants to find something, and it is difficult to describe it more closely than in the three words I have used. But this conversation, which I will give verbatim from one which occurred a fortnight ago, illustrates the absence of the qualities I look for, and it may show you why I think they help to make a good dentist. They certainly help him to get a start on his professional training when he needs assistance from the Dental Board.

ME: I notice you passed your Chemistry in May; what have you been doing since?—VICTIM: I've been at home.

Yes, but have you done any biology, or made any sort of contact with professional work?—No.

Not been to the workroom of any dentist to see the sort of thing you may be doing later on?—No.

Well, what have you been doing? Have you any hobbies?—I did a little fretwork.

Yes, I know, we all catch fretwork like whooping-cough when we are about thirteen; anything else? Have you done any carpentry, or wood-carving, or cabinet-making?—No.

Any making of models or wireless?—No.

Can you tell me the names of any books you've ever read?—I don't think so.

Well, what have you been doing? Have you played any games?—Tennis.

Very well, anything else, since May?—I'm keen on gardening.

Splendid; tell me the names of three sorts of potatoes.—Only flower-gardening.

Good; tell me the name of any sort of rose.—I'm afraid I can't; I just like to keep the garden bright.

And after he has faded away one notices that the family consists of himself and four sisters, which perhaps explains things. And he doesn't get a bursary.

A dentist must be more than a hewer of vulcanite and a drawer of teeth; he must be alive, and alive of course to his finger-tips. But I don't believe that a man's finger-tips can be really alive unless he is alive in himself. That line of Terence which brought down the Roman theatre twenty-one centuries ago "*nihil humanum alienum a me puto*" might well be a motto for the profession. I translate it, roughly, as "I'm keen on every blooming thing." We none of us know what we are really on this world for; but I hazard the suggestion that our minds and bodies and hands were given us to be used. You

only get expert use of anything by practice; and 16 hours a day isn't too long to be practising either mind or body, or both together, as you will find you have to do if you are to make good as practitioners.

Let me tell you a secret. I think very little of my mind, for I don't really trust it, but I think a great deal of my fingers. I have to use my mind, such as it is, and I get the chance to use my fingers hardly ever. But I would take on any of you at putting that tiny brass wire back into a hypodermic needle, size 18, first shot. Not only because I had to do it, or try to, after injections of adrenaline six times a day for three years, but because (now that the asthma has departed) I still try to keep the fingers in training by practising it before I go to bed. Probably quite silly, but do you get the idea? Be proud of all the powers you have and keep them in hard training by exercise.

You have a desperate lot of work to get through here, as I well realise, but don't just do it and be satisfied. Keep your minds sharp by rubbing them up against public affairs, against books, against music, even in criticism of your lecturers and teachers. Better even, I suppose, be a jazz fan than nothing. And try to make sure with your fingers that you do everything you have to do not well enough to pass, but in a way which makes you feel your life in your fingers in every movement you make. If you haven't got to the stage of taking out molars without breaking the roots, try taking a walnut out of its shell and its skin quickly without a break. It is a different dexterity but, I imagine, equally difficult.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surgs. Rear-Admirals P. T. Nicholls, C.B., M.R.C.S. Eng., and J. S. Dudding, C.B., O.B.E., M.R.C.S. Eng., have been appointed Hon. Physicians to the King.

Surg. Lt.-Comdr. E. T. S. Rudd to *Pembroke* for R.N.B., and to *Pegasus*.

Surg. Lt. M. Cay to *Dundee* (on recommg.).

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Comdr. W. H. Butcher to *Victory* for R.N.B.

Surg. Lt.-Comdr. C. Mason to *Victory* for R.N. Hospital, Haslar.

Surg. Lt. A. S. Pearson to be Surg. Lt.-Comdr.

Surg. Lt. E. C. Johnson to *Pembroke* for Chatham Hospital, and M. G. Stratford to *Royal Sovereign*.

Surg. Lt. (D.) H. P. Buchanan to *Pembroke* for R.N.B.

The following appointments as Admiralty Surgeons and Agents have been approved to date Oct. 1st, 1935: Mr. H. M. Clarke, 45, London-road, Reading; Mr. T. D. Gillies, Lynbridge House, Tavistock; Mr. H. L. Pearson, Granville House, The Spa, Gloucester; and Mr. A. M. Bayne, 76, Wimborne-road, Bournemouth.

ARMY MEDICAL SERVICES

The appointments announced under this heading in THE LANCET of August 24th (p. 457) took effect on Oct. 6th.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. A. M. Pollard, D.S.O., retires on ret. pay.

Maj. D. C. G. Ballingall, M.C., to be Lt.-Col.

MILITIA

Maj. A. Picken, O.B.E., M.C., resigns his commn. and retains the rank of Maj.

TERRITORIAL ARMY

Maj. W. Leslie, M.C., T.D., to be Lt.-Col.

Superannumary for service with the O.T.C.—Lt. E. Shipman to be Capt. Gordon Nuttall Bailey (late Cadet,

Uppingham Sch. Contgt., Jun. Div., O.T.C.), to be Lt. for duty with the Med. Unit, Univ. of Lond. Contgt., Sen. Div., O.T.C.

TERRITORIAL ARMY RESERVE OF OFFICERS

Lt.-Col. and Bt. Col. J. V. Bates, M.C., relinquishes his commn. and retains his rank, with permission to wear the prescribed uniform.

Capt. E. A. Downes, from T.A. Res. of Off. (Gen. List, Yeo.), to be Capt.

ROYAL AIR FORCE

Flying Offr. G. H. Morley is promoted to the rank of Flight Lt.

Flight Lt. (Quartermaster) F. W. Goodread is promoted to the rank of Squadron Leader.

Flight Lts. L. Freeman to No. 35 (B) Squadron, Bircham Newton; J. Kemp to No. 207 (B) Squadron, Bircham Newton; G. W. Paton to No. 3 (F) Squadron, Kenley.

Flying Offrs. C. A. Lewis to No. 29 (F) Squadron, North Weald; G. H. Morley to No. 12 (B) Squadron, Andover; J. W. Patrick to No. 12 (B) Squadron, Andover; W. G. S. Roberts to No. 33 (B) Squadron, Upper Heyford.

Dental branch.—Group Capt. C. Leslie Colbran, O.B.E., is placed on the retired list.

A new clause has been inserted into King's Regulations and Air Council Instructions to provide that an officer on half-pay who is likely to return to full pay may, with prior Air Ministry approval, be admitted to a Service hospital if suffering from a disability not attributable to the conditions of Air Force service. Other officers on half-pay may, with similar prior approval, be admitted to a Service hospital provided that the accommodation is not required for patients with a better title to admission. Retired officers who are not re-employed cannot as a rule be admitted to a Service hospital.

COLONIAL MEDICAL SERVICE

The following have been appointed Medical Officers, West Africa: Dr. A. G. W. Branch, Dr. E. J. Bury, Dr. H. C. Foster, Dr. A. F. Fowler, Dr. J. S. McGregor, Dr. K. O'Toole, Dr. J. D. Reid, and Dr. V. T. Thorne. Dr. D. A. P. Hopkin and Dr. R. M. B. Lewis, appointed Medical Officers, Malaya; Dr. A. C. Pilkington, Medical Officer, Zanzibar; Dr. D. A. Smith, Medical Officer, Hong-Kong; and Dr. J. B. Henderson, Assistant Medical Officer, Falkland Islands. Dr. B. F. Home becomes Medical Superintendent, Mental Hospital, Singapore; Dr. A. G. H. Smart, Senior Medical Officer, St. Vincent; Dr. M. V. Boucaud, Medical Officer, Grade I., Colonial Hospital, Port of Spain, Trinidad; and Dr. L. M. Ram, Assistant Medical Officer, British Honduras.

INDIAN MEDICAL SERVICE

The undermentioned officers have vacated appointments in India:—

A.D.H. and P.: Lt.-Col. R. Davidson, R.A.M.C.

A.D.M.S.: Col. E. W. C. Bradfield, C.I.E., O.B.E.; I.M.S., Col. H. C. Winckworth (late R.A.M.C.), Brit. Serv., Col. H. E. Stanger-Leathes, I.M.S.

D.A.D.P.: Major A. Mearns, R.A.M.C.

D.A.D.H.: Major T. O. Thompson, R.A.M.C.

The undermentioned appointments have been made in India:—

A.D.H. and P.—Maj. T. O. Thompson, R.A.M.C.

A.D.M.S.—Bt. Col. W. H. Hamilton, C.I.E., C.B.E., D.S.O., I.M.S.

D.A.D.P.: Capt. T. B. Pahlajani, I.M.S.

D.A.D.H.: Maj. G. K. Fulton, R.A.M.C.

Lt.-Col. (Bt. Col.) W. H. Hamilton, C.I.E., C.B.E., D.S.O., to be Col.

Majs. to be Lt.-Cols.: H. C. Tait, M.B.E., W. J. Webster, M.C., J. C. Chukerbuti, and A. M. Ghosh.

Cpts. to be Majs. (provl.): R. L. Frost, J. C. Drummond, D. M. Fraser, and J. F. Shepherd.

Lt. (on prob.) C. W. A. Searle is seconded while holding an appointment at Addenbrooke's Hospital, Cambridge.

Indian Medical Department: Cpts. (Sen. Asst. Surgs.) to be Majs. (Sen. Asst. Surgs.): T. J. Gibson and J. H. S. Hutton.

OBITUARY

ERNEST MUIRHEAD LITTLE, F.R.C.S. Eng.

WE regret to announce the death of Mr. Muirhead Little at his home in London on Oct. 2nd in his eighty-second year.

Ernest Muirhead Little was born in July, 1854, at Ealing, the fourth son of William John Little, M.D., F.R.C.P., who founded the Royal Orthopædic Hospital, gave his name to spastic paraplegia, and wrote a treatise on club-foot and analogous distortions. It was perhaps natural for that one of his sons who adopted medicine as a career to specialise in the same direction. Moreover, Dr. Little suffered from some shortening of the tendo Achillis for which Louis Stromeyer had treated him by division of the tendon, and Stromeyer was a welcome visitor at the Littles' home in Grosvenor-square; so there was much talk in the house about orthopædic surgery.

Muirhead Little was educated at Westminster School, which continued throughout life to claim

his affection and to which later he sent his own sons. He went on from there to University College. On leaving college he went into business, but not for long; finding it uncongenial he made his escape to St. George's Hospital. His studies were interrupted during the Turco-Servian war of 1876, when he joined the ambulance sent out by the National Aid Society, and he did not qualify until 1880. From 1882-86 he was dispensary surgeon at the Dreadnought Hospital, and in the latter year, having taken the



[Photograph by Elliott & Fry]

MR. MUIRHEAD LITTLE

F.R.C.S. Eng., he was elected surgical registrar to the National Orthopædic Hospital and in due course gained a position on the honorary staff. Orthopædic surgery was then a very minor specialty; treatment was mostly instrumental and surgical interference confined to subcutaneous sections. Operations at the hospital were performed by the whole staff on one morning in the week, the out-patient waiting hall being temporarily converted into a theatre. Conditions at the Royal Orthopædic Hospital were similar, except that it was the house surgeon's sitting-room which was commandeered on Monday afternoons by two porters bearing a massive wooden operating table. No wonder that the King's Fund intervened and in 1905 secured the joining up of the Royal and the National Hospitals, to be united later to the City Hospital. Little was himself not at first in favour of this amalgamation, which was however to afford him the opportunity of practising modern surgery in a hospital of 446 beds instead of the 50 then at his disposal. After the charter had been granted, a small room on the ground floor facing Bolsover-street was converted into a permanent operating theatre.

But Little was then over fifty and lack of opportunity had already handicapped him in acquiring new surgical technique; so that when the present hospital in Great Portland-street was opened in 1909 it was almost too late for him to take full advantage of its facilities. Ten years later he had reached the retiring age.

There were other positions in which Muirhead Little's gifts were not subject to artificial restriction. In 1895 he was appointed surgeon to the Royal Surgical Aid Society in succession to Herbert Allingham, son of William Allingham, the society's first surgeon. Little held that office for 39 years; on one occasion he saw no less than one hundred patients in the day and was very proud of it. Every year for 24 years he described the work of the Society in response to the Lord Mayor's invitation at the Mansion House meeting. During the war he was in surgical charge of Queen Mary's Auxiliary Hospital at Roehampton where disabled officers and men were fitted with artificial limbs. Many stumps were unsuitable for fitting and required re-amputation, and he brought an immense experience to the aid of these difficult cases. At this time he published a book on artificial limbs and amputation stumps which is the standard book of reference on the subject. Later he worked for the Ministry of Pensions. In 1913 he was vice-president of the orthopædic section at the International Congress of Medicine in London. Contending interests were rendering the committee's task of selecting an opener for the first discussion difficult, when the suggestion that Little should open on Little's disease settled at once both opener and subject. In the same year he was elected the first president of the subsection of orthopædic surgery of the Royal Society of Medicine and remained in that office until 1919. He was also chosen to preside over the newly formed British Orthopædic Association.

In a wider circle Little came to exercise increasing influence. His judgment was sound, his knowledge of the literature of orthopædic surgery was encyclopædic, his writings were compounded of erudition and scholarship. Many of them were published in our own columns, the subjects including scoliosis, spina bifida, coxa vara, Pott's disease, and absence of the patella. That he might have been a historian is evident from the admirable History of the British Medical Association, 1832-1932, first published as a series of articles in the British Medical Journal and then reprinted in book form with portraits and pictures. He had no enemies and excited no professional jealousy. Mr. Laming Evans writes: "Muirhead Little was of striking appearance and his good looks remained with him throughout his old age. He might easily have been mistaken for a bishop or a judge. Of abstemious habits, he went out to dine only for the sake of congenial companionship. His entertainments in Seymour-street were simple and kindly, enjoyed by his guests for the brilliance of his conversation. He was not keen on games, but enjoyed a country walk. He was a frequent attendee at the Casual Club, and more than once read a paper there. To all with whom he came in contact he endeared himself; house surgeons respected him, nurses obeyed him with alacrity, and he was adored by his patients, of whose case histories he was tolerant almost to indulgence. His religious views were broadminded and sincere, and he carried them into his daily life."

Mr. Muirhead Little married in 1890 Mary, only daughter of John Burgess Knight, and is survived by his widow, one daughter, and three sons.

DR. GEORGE BRYCE, who died at Torquay on Oct. 3rd in his 75th year, was living in retirement after a life spent in general practice. Born in the village of Whitburn, near Bathgate, Linlithgowshire, he received his medical training at St. Mungo's College, Glasgow, where he won many medals and qualified in 1895. He then settled in the Lozells district of Birmingham where he developed a large general practice, publishing a number of interesting cases in the Midland Medical Journal. In 1911 he took the M.D. degree for practitioners at Durham University. But this was only one side of Dr. Bryce's activities. He joined the Royal Geographical Society and was an ardent supporter of the Peary Arctic Club, publishing in 1911 a historical survey entitled "The Siege and Conquest of the North Pole." After retirement he was able to indulge his love of travel, and in 1931 went up the Amazon with Mr. James L. Palmer, editor of the Western Morning News in search of rare butterflies and plants. To the herbarium at Kew Gardens he presented specimens

of rare Arctic plants that he had gathered in Spitzbergen, and he made an extensive study of the insect life of Labrador.

Of his three children two qualified in medicine at Birmingham: his son is carrying on the Lozells practice, a daughter is in partnership at Torquay.

WILLIAM CARR HUMPHREYS, M.R.C.S. Eng., was a well-known figure in Swansea, where he died after a fall which broke a leg. He was in his 79th year, and had lived for 50 years in a house at the corner of Cradock-street and Northampton-place. Born in Oswestry, he was educated at Bromsgrove School and Queen's College, Birmingham, where he qualified in 1881. His connexion with Swansea began with residence at the General Hospital to which later he became out-patient medical officer. He was before everything the family doctor, always efficient and always at hand when wanted. Throughout life he retained his love of the open air and was often to be seen bathing from the sands or working in his allotment on Town Hill. His personal expenses being small—he never married—he endeared himself by countless acts of generosity. His rounds he did in a horse-drawn brougham.

CORRESPONDENCE

AN APPEAL TO MEDICAL BENEVOLENCE

To the Editor of THE LANCET

SIR,—A part of the work of the Royal Medical Benevolent Fund which has won the very special sympathy and support of many of your readers in previous years is the distribution of Christmas gifts. Undoubtedly it is due to the fact that this particular appeal touches the heart and kindly feelings of all as it comes at the season of good fellowship. Once again I venture to make my appeal in your columns for donations, either large or small, in order that the Fund may continue the distribution of 30s. each to all beneficiaries.

I cannot but feel impressed when I read the many letters of thanks which are received from the recipients after Christmas Day. Clearly these letters are written from homes where no luxuries exist, and where the greatest economy has to be studied; often from cheap lodgings or single bed-sitting-rooms where lonely ones rejoice in the fact that they have not been forgotten. But all the letters contain expressions of gratitude and thanks to those who have made the gift possible.

I do not wish to stress unduly the needs and difficulties of our less fortunate medical brethren or of those who were once near and dear to them. But I do desire to assure your readers of the great work the Benevolent Fund is doing in bringing some happiness and comfort into the lives of many. This kindly work is being carried on thanks to the generous support which the committee has received, but it can only be continued and increased if we still receive the support and sympathy of our professional colleagues.

Donations should be sent, and cheques made payable, to the hon. treasurer, Royal Medical Benevolent Fund, 11, Chandos-street, London, W.1, who will gratefully acknowledge them.

I am, Sir, yours faithfully,

THOS. BARLOW,

Sept. 12th. President of the Royal Medical Benevolent Fund.

IMMUNISATION AGAINST SCARLET FEVER

To the Editor of THE LANCET

SIR,—Your leading article last week under this heading omits mention of one of the chief difficulties of the problem. I refer to the fact that scarlet fever is not really a disease at all. The term was applied to a group of symptoms before their cause was understood. Now we know that "the rash" of scarlet fever is caused by the exotoxin of certain hæmolytic streptococci in persons devoid of antitoxin. The hæmolytic streptococci will cause tonsillitis without the rash in persons possessing the antitoxin. This tonsillitis is just as likely to be followed by complications in those who do not get the rash as in those who do, and is highly infectious. By immunisation an entirely false sense of security is obtained. The immunised no longer get the rash but they are just as liable to get recurrent tonsillitis. However, tonsillitis without a rash is not "officially" scarlet fever, and no particular attention is paid to it or isolation of the infected person insisted upon.

The following example illustrates this point:

In a certain children's hospital, where the nurses had been immunised against scarlet fever for some years, an epidemic of tonsillitis occurred in a ward. Some seven children were involved, two of whom got a scarlatina-form rash. The cause of the trouble was found to be the staff nurse who had a "sore-throat." The organism obtained from the throats of all the children was identical—i.e., a hæmolytic streptococcus which produced a fairly strong exotoxin on culture. The two children with the rash were said to have "scarlet fever"; the others and the nurse "tonsillitis." The children with the rash were sent to a fever hospital; the others were not.

On it being suggested to the matron that the staff nurse had scarlet fever "in her throat" the former became angry and pointed out with some vigour that all her nurses had been immunised against scarlet fever and were known to be immune, adding that if every nurse with a "hospital throat" was to be treated as if she had scarlet fever she (the matron) would not have any nurses left.

Space does not permit me here to enlarge any further on this curiously anomalous position, but it is

clear that before immunisation of school-children is generally recommended a more scientific understanding of the problem by the profession is needed.

I am, Sir, yours faithfully,

Dublin, Oct. 7th.

W. R. F. COLLIS.

MEDICAL ASSESSORS

To the Editor of THE LANCET

SIR,—Your important leading article upon this subject makes plain the fact that the laws of England empower judges of the High Court to call medical assessors if they think fit. The question in the last paragraph of your article is, for the time being, a sufficient commentary upon the rarity with which they take advantage of the power placed in their hands. Your article touches the fringe only of most complicated legal, medical, social, and religious questions. Turning to one side only, eminent legal authorities fully realise that the legal position with regard to responsibility for crime urgently needs a complete overhauling. England at present is doing nothing to prevent the increase of mentally deficient members of the population. Take one aspect. There can be no doubt that mental deficients are constantly being sent to prison, some more than once. No counsel will put forward a plea of insanity on a trifling charge involving six months' imprisonment. In these cases the plea of insanity not having been raised, the presence of a medical assessor would be useless. If the mentally deficient prisoner be found guilty, or not guilty, the person is subsequently liberated to continue a career of crime and legitimately, or frequently illegitimately, increases the number of mentally deficients in this country.

Let it be supposed that a judge accepts the presence of a medical assessor, would he be able to examine the prisoner, consider the past record and family history, before giving his opinion? Answers to these questions are essential in order to form that opinion. I have recently seen the record of a mentally deficient who has been twice imprisoned, but is now fortunately in an institution where, let us hope for the sake of the community, he will remain.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 7th. G. LENTHAL CHEATLE.

ASCARIS INFECTION

To the Editor of THE LANCET

SIR,—In THE LANCET of August 10th last there is an annotation on ascaris infection; in this a passage from our editorial of last June on the same subject is described as a suggestion for the "... deliberate fouling of the usual drink of hundreds of millions. ..." Such a strong expression is scarcely excusable on any grounds, and we feel sure it must have escaped your personal notice; it could only emanate from someone who has been out of personal contact with tropical conditions for many years and who has not kept himself au fait with recent advances in tropical sanitation.

Our experiences in numerous discussions with those who have installed or are proposing to install these latrines has been that the question of the proximity to wells and of the possibility of fouling these is always most carefully considered as a matter of course. In an article which was not a complete discussion on bore-hole latrines in all their aspects but one written to draw the attention of sanitarians in India, and in Assam in particular, to a form of latrine that has been thoroughly "tried out" and been

found of great value in other tropical countries, it was not considered necessary to reiterate fundamental principles of sanitation.

In a comprehensive scientific discussion on bore-hole latrines, the question of well pollution, about which there is already a certain amount of experimental data available, would have to be given full consideration.

I am, Sir, yours faithfully,

L. EVERARD NAÏER,
Editor, Indian Medical Gazette.

School of Tropical Medicine, Calcutta, Sept. 19th.

* * Bore-hole latrines are designed to carry infective material into the ground water, and if this polluted water should reach drinking-water wells the fouling of the drinking water is not accidental but the result of deliberate action. This was the sense in which the words "deliberate fouling" were used in our annotation. The question is whether the migration of pathogenic bacteria does actually take place from latrine to well. C. H. Yeager, one of the pioneers of this type of latrine, working at Singapore for the Rockefeller Foundation, showed that the colon bacillus was carried in the subsoil water 70 feet in 19 days irrespective of the direction of its flow, and American observers have traced still more extensive migration. But in his latest publication which has just reached us Yeager remarks that bore-hole latrines are "very much safer than we believed before the bacteriologic work during the past two years was completed." If this experimental work, which has not yet been published, should justify the proximity of latrines to wells, believed from actual experience, a free from risk, the bore-hole latrine would be gladly accepted by sanitarians the world over.—Ed.

"A CURIOUS EPIDEMIC OF SORE-THROAT"

To the Editor of THE LANCET

SIR,—The account in your issue of Sept. 28th (p. 740) of an epidemic of sore-throat at a Northants village reminds me of a rather similar outbreak which occurred at the Midland Counties Asylum at Knowle, near Birmingham, in April, 1908, reported in your columns at the time (THE LANCET, 1908, ii., 1814). In this outbreak a nurse first complained of pharyngitis and tonsillitis which rapidly spread to other nurses on the female side, then to the male nurses and to a number of the male inmates. The throat infection was at first thought to be Klebs-Löffler, but diphtheria bacilli could not be found in the swabs although diphtheroid bacilli were present and there was plentiful growth of both streptococci and staphylococci. When this epidemic abated a similar but more severe one occurred in my practice at a private proprietary school where the boys fell down like ninepins, the whole class going sick one by one, all with similar symptoms and local signs. One boy died of cardiac failure fourteen days after onset of symptoms. His was the only throat with Klebs-Löffler bacilli; all the others showed Hofmann's diplococci and streptococci, but no diphtheria bacilli, except in one case in which the local throat signs were slight. During the epidemic the masters and servants in the school had slight pharyngitis with no constitutional disturbance. At the same time as this occurrence an epidemic of diphtheria prevailed in the neighbouring parishes.

I am, Sir, yours faithfully,

Rowington, Warwick, Oct. 5th.

J. O. HOLLOCK.

ORIGIN OF BOILS

To the Editor of THE LANCET

SIR,—It would be interesting if dermatologists would give opinions in your columns regarding the aetiology of boils on the neck. Do they consider that the failure on the part of most hairdressers to sterilise their clippers, scissors, and combs may be a contributory cause? If so, do they consider that the immersion of instruments in surgical spirit would be of value? Opinions on the sterilisation of brushes would also be useful. The neck clipper, when dissected, reveals an astonishing collection of hair, and I believe that organisms may easily be conveyed from one customer to slight abrasions on the neck of another. In view of the frequency of the condition it seems desirable that the matter should be ventilated. Infection, sometimes severe, of the eyebrows certainly follows plucking, and I think furuncle of the nostrils often arises from the same cause. It may therefore be that occasional epilation by blunt clippers allows access to organisms already present, and the idea that the clipper itself conveys infection may be quite wrong. It seems, however, well worth while to discuss the matter in the hope that hairdressers will, if necessary, coöperate in any measures that the dermatologists consider desirable.

I am, Sir, yours faithfully,

Beeston, Notts, Oct. 7th.

L. P. LOCKHART.

EVIPAN SODIUM WITH PREMEDICATION

To the Editor of THE LANCET

SIR,—The value of Evipan Sodium as a general anæsthetic was so ably put forward by Mr. Dickson Wright in your issue of May 4th that I was persuaded to give this barbiturate an extended trial. The following points, arising out of its use in 125 cases during the last few months, may be of interest to some of your readers.

Having to treat a large number of cases of abortion sent into St. Giles Hospital, we decided to use evipan anæsthesia for those whose symptoms demanded surgical intervention. At first it was found that the patients came into the operating theatre apprehensive and excited, and several of them appeared to be very resistant to the drug. Preliminary medication was indicated, and cautiously adopted, and it was found that if it was given at least *one hour* before operation, and if the evipan sodium solution was injected into the vein slowly and by stages, then a uniform and uneventful anæsthesia was obtained. As a routine dose (of course subject to modification to suit special needs) omnopon gr. 1/3 with hyoscine hydrobromide gr. 1/150 has been given to our last 120 cases 1-1½ hours before operation. We have strictly adhered to this time interval between premedication and the exhibition of the barbiturate, and to the following technique when injecting the latter. The uniform success of the practice has inspired our confidence.

After premedication the action of the evipan given intravenously is so consistent that we have become accustomed to regard its dosage as almost uniform in its effect upon the patients. An ampoule of the substance contains one gramme (grs. 15) and this must be completely dissolved in the 10 c.cm. of sterile distilled water from an ampoule which is also provided by the makers. From 2.0 to 2.5 c.cm. of the solution is *slowly* injected into a suitable vein in front of the forearm (we take about fifteen seconds to do this) and the patient is carefully observed. No attempt is made to get her to count herself out,

but a few words of encouragement are spoken to enlist the aid of "suggestion," so valuable in the induction stage of any general anæsthetic.

This initial dose of say 2.5 c.cm. in fifteen seconds is almost always sufficient to produce unconsciousness. The action of the drug can be clearly seen in the rather sudden relaxation of all muscles. As soon as the initial loss of consciousness occurs the injection is stopped, and it will usually be noticed that there is a transient cessation of respiration. It seems proper to await passively the natural return of the normal respiratory rhythm before giving any further injection. In our series this has always occurred after twenty or thirty seconds.

The return of a normal respiratory rhythm is the indication for the injection of a second 2.0-2.5 c.cm. of the solution, which is given as slowly as the first. A careful watch is kept on the patient during this second phase, and again the respiratory rhythm is seen to fade away. This time a longer interval is allowed to elapse and the return of good respiratory movement awaited passively. A period of about sixty seconds for this second interval has proved quite satisfactory before the final dose of another 2.0-2.5 c.cm. is given, and this is injected as slowly as before. Thus about two minutes are allowed in which to inject 7.0-7.5 c.cm. of the solution.

After the final dose the patient is in a deep sleep; yet we have found that the course of the anæsthesia runs more smoothly if she is left undisturbed for at least another minute. Nothing should be allowed to disturb her during the induction stage, unless an attempt to hasten the return of respiratory movements by pressure on the chest-wall is indicated; nor should too hurried a start be made with the operation. We have found that, as with an inhalation anæsthesia, a smooth passage into unconsciousness, and a little time allowed for the body to become accustomed to the altered conditions, ensures very much more satisfactory results.

In this series of cases which have received premedication the action of the evipan has been so uniform that we have found that 2.0-2.5 c.cm. (grs. 3½) may be confidently expected to induce sleep, and that our total dose for a general anæsthesia lasting some fifteen or twenty minutes has averaged 7.5 c.cm. (grs. 10). It has been found easier to control the dosage when the solution is injected in three stages and in approximately equal proportions, as has been described.

Observations have been made upon the blood pressure of some of our patients during the course of this anæsthetic. A Baumann's sphygmomanometer was used in place of the usual tourniquet, and it was seen that there was a transient fall of 15-20 mm. Hg in the initial stages of the induction, rarely more. The pulse-rate rises slightly, as expected with the small fall of blood pressure, and then remains very steady, and a "good pulse" throughout the operation is usual. We have learned to pay most attention to the patient's respiration, and have been guided by this both for the rate of injecting the solution, the amount to be given, and the duration of the interval between each part of the dose. It has not been found necessary to disturb the patient by inserting an airway.

If it is desired to counter too large a dose, or if for any reason it should become necessary to hasten the recovery of consciousness at any stage, Coramine has been used. The contents of two ampoules (3 c.cm.) are injected intravenously. Almost immediately the patient's respiratory movements

quicken and become deeper; then there are vague movements of the limbs and head, the pulse quickens, and more colour is diffused into the face. It is stated that 10 c.cm. of coramine may be given, but we have never required more than 5 c.cm. After the initial stimulation passes off, the patient usually continues to sleep on quietly, but can be roused by any vigorous action of an attendant.

If left alone after operation a patient usually sleeps on peacefully for a couple of hours; the exact time seems to depend upon her individual need for sleep. She awakes refreshed, without any feelings of nausea, and has none of the distressing symptoms so often associated with recovery from an inhalation anaesthetic.

The conclusions reached so far are: (1) that the barbiturate derivative sodium evipan is a rapid and pleasant general anaesthetic for surgical operations of short duration, and that it is notably free from any unpleasant after-effects; (2) that in a series of 120

cases premedication has greatly facilitated the action of this drug; (3) that the premedication we have used, without any alarming or unexpected symptoms in any case, has no marked contra-indications; (4) that the clue to its successful use is a very careful observation of the patient's respiration; (5) that in order to guard against any real depression of the respiratory centre a sufficiently long interval of time must be allowed to elapse between the administration of the preliminary medication and the administration of the sodium evipan. It has been found that *one hour* is the minimum interval and one and a half hours the optimum time that should be allowed to elapse after using the narcotic mentioned.

This series of cases is too small to justify final opinions, but thus far the method has given entirely satisfactory results.

I am, Sir, yours faithfully,

R. W. NICHOL,
Assistant Medical Officer, St. Giles
Hospital, Camberwell.

Oct. 8th.

PUBLIC HEALTH

THE NEW HOUSING ACT

At a meeting of the Royal Sanitary Institute last Tuesday Lord BALFOUR of BURLEIGH presided, and Dr. JAMES FENTON read a paper on the Housing Act, 1935.

The housing problem, Dr. Fenton said, was one for which no Government had so far found a satisfactory solution, and many would think that further legislation would soon be needed, although the new Act brought many improvements. Its most outstanding feature was perhaps the establishment of a national standard of overcrowding. A house was now overcrowded when it was necessary for any two persons over ten years of age and of opposite sex (excluding spouses) to sleep in one room; or alternatively when it was inhabited by more than the permitted number of persons as set out in a schedule of the Act. The permitted number was calculated from two tables based on the floor area and on the number of rooms. A child under one year did not count, and a child between one and ten was half a unit. A room with floor area of less than 50 square feet was excluded. Dr. Fenton described the application of this standard to his own district of North Kensington, where previously a standard of 400 cubic feet of air for adults and 200 cubic feet for a child under ten had been applied to old areas, but 450 cubic feet had been required in improvement areas for every person, regardless of age. This was higher than the standard anywhere else in the country, but not as high as that of the new Act. In a typical street of an improvement area in North Kensington there were 145 houses of the terrace type, each with eight good-sized rooms and a small slip-room. These were let out to 3, 5, or more working-class families. In 1932 these houses had held 625 families (2386 people), an average of just over 16 people per house. Over 80 per cent. of the rooms had been used both for living and sleeping, and on the lower of the two cubic feet standards only 21 of the families had been overcrowded. In 6 families the overcrowding could have been remedied by adjusting the sleeping arrangements, and the displacement of only 19 persons would have abated it in the remainder. When the standard of 450 cubic feet per person has been applied in 1934 it had been found that 103 families, consisting of 643 persons, were overcrowded. When

the standard of the new Act was introduced, after rigid application of the old standard had eliminated overcrowding, it was found that 68 families, consisting of 368 persons, were living in conditions now regarded as overcrowded. Nevertheless the standard of the new Act was not too high for a built-up area. It was apt to be severe on houses with large rooms, but would permit a theoretical density of 330 persons per acre in the street he had in mind. The provision that a baby did not count gave the family a year's notice before they had to move into larger premises. A survey of North Kensington had shown that there were some 2000 or 3000 families living in overcrowded conditions, out of a total of 20,134, although the bye-law standards had been rigidly enforced.

There had been no serious obstacles to the completion of the survey. The first survey might be described as a "door step" survey, for the enumerator only had to ascertain the number of rooms and need not enter the house, though he usually did so. He probably knew the number of rooms in the house before he knocked at the door, and one or two questions and the use of his eyes would show him whether that particular house was different from similar ones already familiar to him. He then had to obtain from some intelligent occupant the number of families and individuals and their ages and distribution in the rooms. He could visit approximately 50 houses in the day, with perhaps 15 failures to obtain the required information. In Kensington it had been found that one man could get the necessary information in 250 houses in one week with a population of 2500. One clerk could cope with the forms brought in by six enumerators. The second survey was a much more detailed affair as it required information of the size of the rooms. It was quite unsafe to assume that all houses in a terrace had rooms of the same size. One worker would not be able to cover more than 50 houses a week, and sometimes five or six visits had to be paid. Again one clerk could deal with the material brought in by six survey assistants.

The duty of local authorities to enforce the overcrowding provisions fell into two parts: prevention and abatement of overcrowding arising after and existing on the appointed day. The provisions of the Act relating to the first part were definite and not difficult to enforce. The landlord must take

reasonable steps, when letting, to ensure that the number would not be excessive, and must notify the local authority within seven days if he subsequently became aware of overcrowding. The occupier could then be served with a notice requiring abatement without offering alternative accommodation. If the occupier or a member of his family persisted in the offence, the local authority could apply to a magistrate for vacant possession, expenses being recovered from the landlord. This was an innovation. The problem of existing overcrowding was a little more difficult. An occupier was not guilty of an offence unless he was offered suitable alternative accommodation: adequate housing, near his work, with security of tenure, at a rate within his means.

Mr. J. S. WHEELER (Housing Inspector, Kensington) reminded his audience that the rooms vacated by one family might bring relief to a smaller family. The officers of bodies concerned in Kensington were notified several weeks in advance of rooms which would become vacant and had frequently been able to approach owners and urge them to let rooms to families known to be living under unsatisfactory conditions. New accommodation of 74 flats had enabled the authorities to abate overcrowding in 144 families of 1001 persons. An important innovation in the new Act was the introduction of redevelopment procedure. An area suitable for redevelopment was one containing at least 50 working-class houses of which one-third were overcrowded, unfit for human habitation, not repairable at reasonable cost, or congested in arrangement. Redevelopment in a large city like London would, Mr. Wheeler thought, prove extremely difficult. The cost would be great and the number rehoused might not justify it. Moreover, the Exchequer grant was less generous than that of the 1930 Act. The new Act provided that houses which were only dangerous to health because of bad arrangement were paid for at market value instead of site value if they stood in a clearance area. If the local authority made a clearance order requiring the owner to demolish, they must themselves purchase and demolish such houses. A mixed house—i.e., one only partly used for habitation—might be included in a clearance order if any part used for dwelling was unfit by reason of disrepair or sanitary defects. Very few houses would prove to be dangerous solely by reason of bad arrangement; they generally had sanitary or repair defects. The increased cost to local authorities arising out of the amendment which prescribed market-value compensation for such buildings, was not therefore likely to be great. If the Minister was satisfied that a house had been well maintained, although rightly included in a clearance or compulsory purchase order, he might direct the local authority to pay compensation over and above site value. An amendment of special interest to health officers was that the local authority must give an objecting owner their reasons for declaring his house unfit at least 14 days before the public inquiry. In Kensington the evidence of the medical officer and sanitary inspectors was prepared well in advance, and anybody could see it. Cross-examination would be shortened and the case strengthened by putting in advance copies of the evidence. Another new provision allowed a local authority to enforce closure of any part of a house, whether let separately or not and even if not occupied. Any unfit underground room could be closed.

In answer to questions, Dr. FENTON said that in

the Kensington survey no differentiation had been made between working-class houses and any other type; the survey had been directed to congestion irrespective of social distinctions. Neither landlord nor tenant had been notified of the survey, but less than a dozen objections had been encountered. The information given by a responsible head of a family was reliable in the great majority of cases. The service of notices would take as much time and money as house-to-house visitation, and was far less satisfactory as it always required verification by visit in the end. The standard of overcrowding was the potential accommodation available to any one family, even if in fact they all chose to sleep in one room.

School Medicine in the Future

MANY school medical officers were moved by the jubilee of their service to review its progress and achievements, and the widening of its scope; some of them gave their views about what is still to be hoped for. No one has made such incisive comment or advocated such radical alteration as Dr. Henry Herd (Manchester), who has expressed in clear and outspoken language thoughts that have been floating in many minds. The present statistical table prescribed by the Board of Education does not, he thinks, give a true picture of the health of school-children and it encourages too intense a concentration on the discovery of defects and diseases. School doctors, in common with others, have learnt that "there is a time to speak and a time to keep silence in the case of enlarged tonsils," but the policy might be extended to other conditions such as certain varieties of heart disease. His main criticisms of the present system are these: (1) lack of opportunity for continuous study of the individual child; (2) the static character of the present investigation. All we are getting now is merely three cross-sections of the child's condition at four-year intervals; of what goes on between the routine examinations nothing is known. Dr. Herd insists on the need for periodical supervision at shorter intervals; better still would be a continuous record from infancy. As an example he cites the record of nutrition and he approves the scheme of the London County Council whereby a continuous record of height and weight is made from measurements taken twice a year. A record of this kind is facilitated by a card designed by Dr. E. D. Irvine (Blackburn), starting from the infant welfare period and going on through school life, which he hopes may be of value to medical officers of juvenile instruction centres, factory medical officers, and even to panel practitioners. Dr. Herd points out that the emotional reactions of children to their surroundings are fundamental even for their physical growth and development. The school service should study the psychological problems which at present are relegated to child guidance clinics; this would necessitate child psychiatry being part of the equipment of every school medical officer.

Dr. Herd's second point is that it is not enough to adjudge a child healthy because it shows no abnormality when at rest under examination. There should be study, by careful observation of the child's work and play, of how the whole organism is functioning. As it is children are now often brought forward as special cases by observant teachers. Tests of physiological fitness, as Dr. H. E. Magee has pointed out (*THE LANCET*, 1935, i., 268), have still to be put in practice, for scientific evidence of functional derangement before organic change sets

in would make prevention possible in the true sense. Two of the tests mentioned by Dr. Herd are the subject of report during 1934: the use of the dynamometer by Dr. A. T. Powell (Walthamstow), and the estimation of hæmoglobin by Dr. S. F. Reynolds (Manchester); while the respiratory test has been studied in previous years by Dr. J. V. A. Simpson (Torquay) and Dr. J. G. Woolham (Manchester).

Dr. Herd's final point is that instruction in hygiene should be given by the school doctor. It is, he says, altogether anomalous that the officer who has to deal with defects arising from faulty hygiene should take no part in teaching how to prevent them. Here he is in agreement with the London County Council scheme for medical care of those over 14 years of age, which lays down that the medical officer inspecting the adolescents should be himself the lecturer in hygiene.

A Doubtful Case of Typhus Fever

The last weekly return contained the notification of a case of typhus fever from the Port of London. Dr. C. F. White, medical officer of health for the port, informs us there is an element of doubt about the diagnosis. The circumstances were these:

A male Chinese, aged 41, embarked as a steerage passenger at Hong-Kong on August 14th. He was last ashore at Penang on August 23rd. On Sept. 4th he had a slight febrile attack but his temperature returned to normal the next day. On Sept. 11th he had a shivering attack, complained of headache and backache and took to his bed. The ship's surgeon found his temperature to be 103° F. On Sept. 14th he developed a macular eruption, profuse on the abdomen, chest, and back, but sparse on the arms and legs. This rash became petechial and was confluent in the groins and axillæ. The patient was dull and stupid and the ship's surgeon diagnosed typhus fever.

On arrival in the Port of London on Sept. 18th the boarding medical officer found the man with a temperature of 103° F., pulse 130, respirations 30. His face was somewhat bloated, the conjunctivæ injected, the tongue dry and brown, and there were sordes on the lips. He was dull and apathetic, and it was difficult to attract his attention. There was a coarse macular and petechial eruption as described. There was bronchial congestion at the base of the right lung. No pediculi corporis or capitis were found but pediculi pubis were in evidence.

The patient and his wife were removed in the ambulance launch to the port sanitary hospital, being deloused before admission to the cubicle ward. The Chinese crew were also taken ashore and deloused; meanwhile their quarters and the ship's hospital were fumigated with sulphur dioxide. The passengers and white crew were medically examined and all were found well. In hospital the rash faded and the temperature fell to normal on the twelfth day from the onset. There was no enlargement of the spleen, slight albuminuria and obstinate constipation.

Samples of blood were sent to two bacteriologists, both of whom reported the Weil-Felix reaction negative, but the Widal strongly positive (1 in 640 for *B. typhosus*).

Although bacteriologically the case was considered to be typhoid, clinically the eruption, the history, and the general appearance of the patient were characteristic of typhus fever.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 28TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2289; diphtheria, 1128; enteric fever, 68; acute pneumonia (primary or influenzal), 520; puerperal fever, 37; puerperal pyrexia, 85; cerebro-spinal fever, 10; acute poliomyelitis, 20; encephalitis lethargica, 6; dysentery, 34; ophthalmia neona-

torum, 86. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the infectious hospitals of the London County Council on Oct. 4th was 2743, which included: Scarlet fever, 926; diphtheria, 1028; measles, 23; whooping-cough, 321; puerperal fever, 18 mothers (plus 12 babies); encephalitis lethargica, 269; poliomyelitis, 16. At St. Margaret's Hospital there were 17 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox or enteric fever, 7 (0) from measles, 1 (0) from scarlet fever, 18 (6) from whooping-cough, 20 (6) from diphtheria, 69 (15) from diarrhoea and enteritis under two years, and 18 (2) from influenza. The figures in parentheses are those for London itself.

Deaths from diarrhoea and enteritis were distributed over 27 great towns, the highest being Liverpool 12, Leeds 7, Sunderland and Birmingham each 5, no other great town more than 2.

The number of stillbirths notified during the week was 272 (corresponding to a rate of 43 per 1000 total births), including 45 in London.

MEDICAL NEWS

University of Cambridge

At recent examinations the following candidates were successful:—

D.M.R.E.

Part II.—Hans Jungmann, D. W. Lindsay, D. F. MacDonald, J. W. McLaren, Alfred Pollitt, N. C. Sinha, I. G. Williams, and C. W. B. Woodham.

University of London

Three lectures on the comparative histophysiology of the vertebrate nephron will be given at University College, Gower-street, W.C., by Dr. Pol Gerard, professor of histology in the University of Brussels, on Oct. 22nd, 24th, and 25th at 5.30 p.m. Admission without ticket.

University of Liverpool

At recent examinations J. B. Mackie, H. E. C. Sutton, and Patricia I. Unsworth were successful in obtaining Part II. of the diploma in public health.

British College of Obstetricians and Gynaecologists

The following have been awarded the diploma of the College (D.C.O.G.) after examination:—

P. N. Bardhan, Wilfrid Bradley, J. O. F. Davies, E. G. Frewer, S. M. Green, B. P. Harris, A. M. Hunter, W. M. Martin, N. H. Merchant, R. A. Nash, P. W. Rice, S. H. Swift, H. T. Tate, Doribai Valiram, J. A. Walker, J. W. Walker, and B. E. Warm.

Medico-Legal Society

The first meeting of the session will be held at Manson House, 26, Portland-place, London, W., at 8.30 p.m. on Thursday, Oct. 24th, when Mr. C. A. Mitchell, D.Sc., will deliver a presidential address on forensic medicine in relation to medicine. Manson House, the headquarters of the Royal Society of Tropical Medicine and Hygiene, will be the Medico-Legal Society's meeting-place for the future. The annual dinner is to be at the Holborn Restaurant on Friday, Dec. 13th. The hon. secretaries are Mr. Ernest Goddard (3, South-square, Gray's Inn, W.C.1) and Dr. W. G. Barnard.

Industrial Welfare Society

At 5.30 p.m. on Tuesday next, at 14, Hobart-place, London, S.W., Dr. S. W. Fisher, H.M. medical inspector of mines, will give an address on the medical aspects of a miner's life to the advisory medical committee of this society. Dr. D. A. Coles, who is retiring from the chairmanship of the committee, is being entertained at dinner at the Goring Hotel, Ebury-street, S.W., at 7.45 p.m. on the same day.

Post-graduate Course on Tuberculosis

From Nov. 4th to 9th a post-graduate course will be given, under the auspices of the Joint Tuberculosis Council, by the medical and surgical staff of the Brompton Hospital for Consumption and Diseases of the Chest, London. There will be two lectures each morning and each afternoon (except Saturday), and the meetings will be held at the hospital. Further particulars may be had from Dr. William Brand, 8, Christchurch-place, Epsom, Surrey.

HOSPITAL DINNERS

Charing Cross Hospital

The annual dinner of past and present students of Charing Cross Hospital medical school was held at the Café Royal on Oct. 5th. In the absence of Dr. A. W. Oxford, who was prevented by ill-health from taking the chair, Mr. Norman C. Lake presided, and pointed out the difficulties of understudying one who was doctor of medicine, doctor of divinity, Greek scholar, antiquarian, and philatelist. A message of sympathy was sent to Dr. Oxford. In proposing the toast of the hospital and the medical school Mr. Lake spoke of the hope, once entertained, of turning the old nurses' home into a block of private wards. The nurses were now safely housed in their new quarters at Haverstock Hill, but the architectural disadvantages of the old home could not be overcome without rebuilding. The Charing Cross tradition, linked with memories of Huxley and Livingstone, did not depend upon bricks and mortar, and he felt that the hospital would be subserving the interests of science best if it were rebuilt. This was the centenary year of the medical school, which was now more prosperous than it had ever been. Mr. C. J. Marshall, presuming on a friendship which had, on Mr. Lake's admission, "withstood the co-authorship of a text-book," gave some happy reminiscences of the chairman, and Mr. Eric A. Crook, the dean, spoke of the proposal to bring back the teaching of anatomy and physiology to the medical school. He also referred to the great loss to the hospital during the past year in the deaths of Dr. W. J. Adie and Dr. W. Howard Jones. Dr. Gordon M. Holmes proposed the toast of the visitors, coupling it with the names of Prof. D. M. Blair and Mr. R. T. D. Stoneham. Mr. Herbert J. Collings baffled the company agreeably with conjuring tricks, and recounted the story of the consultant who undertook to examine a patient for fifty guineas. "Do!" said the patient, "and if you find them you can have half."

St. Thomas's Hospital

The old students' dinner was held at the Dorchester Hotel on Oct. 4th, when Sir Cuthbert Wallace presided over a gathering of nearly two hundred. The chairman having remarked that they were there to learn something about the hospital and the school, Sir Arthur Stanley said that as far as the hospital was concerned things were going on well. The reconstruction of the outpatient department was now complete, and "something that will do for a medical school" (even if not up to the dean's expectation) was going up at a cost of about £70,000, none of which would fall on hospital funds. Six of the eight wards had been remodelled and the amenities of College House had been improved, especially by the addition of a veranda. Lady Riddell's gift had made it possible to rebuild the nurses' home, complete with swimming bath. That released accommodation in the paying block, a matter in which St. Thomas's had led the way and should not be dropping behind. Sir Arthur ended with an appeal to his hearers not to let people think St. Thomas's was rich, but to take every opportunity of denying such an impression, for the hospital needed £20,000-£30,000 a year to keep it going, and £100,000 now for capital expenditure. Prof. L. S. Dudgeon, who replied for the school, joined with Sir Arthur Stanley in congratulating the chairman on having obtained the highest post in the surgical profession. He besought him during his term of office to make some effort at co-operation between the College and the medical schools. He spoke with regret of the retirement of Mr. Nitch with whom he had entered the school. He recorded sundry honours to St. Thomas's men, including the translation of Prof. LeGros Clark to the chair of anatomy at Oxford, and mentioned the addition to the dissecting-room of an X ray department for anatomical study of the live body. He set out the good athletic record of the year and concluded with a tribute to the scheme for co-operation with the medical schools of St. Bart's and Guy's. Prof. T. B. Johnstone, dean of Guy's, who responded to the toast of The Guests, said he entered gladly into the entente cordiale, the aim being to give students of the three schools something they had not had before, but he reminded his hearers that after the separation of St. Thomas's

and Guy's in 1825 there had been a united hospitals dining club of which he gave some entertaining details. Dr. A. E. Russell proposed the health of The Chairman, to which Sir Cuthbert Wallace replied by remarking: "If you get out of St. Thomas's Hospital what I have got of joy and happiness you will be very lucky." The formal proceedings closed at the early hour of 10 to allow conversation and social intercourse.

King's College Hospital

The annual dinner of past and present students of King's College Hospital was held on Oct. 5th, at the May Fair Hotel, with Sir Charlton Briscoe in the chair. Dr. G. F. Still, consulting physician and professor emeritus for diseases of children, was presented by the chairman with a book containing the names of subscribers to the fund which was collected for his portrait exhibited in this year's Academy. Thanks to the generosity of the artist, Mr. Gerald Kelly, the proceeds for the fund are to be devoted to an endowment of a cot in the children's ward. Sir Charlton Briscoe spoke of the great loss sustained in the resignation of the Duke of Connaught from the presidency of the hospital, and expressed his pleasure that the Duke of York had consented to succeed him as president. Dr. J. A. Drake, the dean, announced that the medical school was more flourishing than it had ever been, and reported the opening of a new biochemical laboratory. He made a special reference to Dr. Willoughby Lyle's book, "King's and Some King's Men," which contains, he said, a wealth of information about everything and everybody who has had anything to do with King's. Dr. Still returned thanks for the gift book presented to him, and Dr. R. H. Lee told entertaining stories of the time when the chairman was a student and house surgeon.

The Duke of York will preside for the first time as president of King's College Hospital at the festival dinner to be held at Claridge's on Thursday, Nov. 14th. He will announce the programme for the further development of the hospital.

Memorial to Miss Davies-Colley

A memorial is being raised to the late Eleanor Davies-Colley, M.D., F.R.C.S., and donations may be sent to the honorary treasurer, Miss Chadburn, at 16, Harley-street, W.1. The sum raised will be used mainly for the benefit of the South London Hospital.

Chadwick Public Lectures

The autumn programme of the Chadwick Trust includes a lecture by Dr. Killick Millard on the Vaccination Question To-day, which will be given on Friday, Nov. 1st, at Manson House, 26, Portland-place, London. On Tuesday, Nov. 19th, at the London School of Hygiene and Tropical Medicine, Keppel-street, W.C., Prof. R. C. McLean will speak on the bacteriology of the atmosphere. Both lectures will be at 5.30 P.M. Further particulars of the programme may be had from the secretary, Mrs. Aubrey Richardson, at the offices of the Trust, 204, Abbey House, S.W.1.

Hampstead General and North-West London Hospital

The sixth winter session of post-graduate lectures at this hospital will open on Wednesday, Oct. 16th, at 3 P.M., when Mr. Herbert Naylor, physical director of the Y.M.C.A., will speak on health and exercise. Other lecturers will be: Dr. Saxby Willis, thoracic pain (Oct. 23rd); Mr. D. H. Patey, traction in the treatment of fractures and dislocations (Oct. 30th); Dr. H. V. Morlock, diagnosis and treatment of intrathoracic new growths (Nov. 6th); Mr. H. Lawson Whale, fads and fancies in laryngology (Nov. 13th); Dr. H. Courtney Gage, radiology of the genito-urinary tract (Nov. 20th); Dr. Adolphe Abrahams, insomnia and other disturbances of sleep (Nov. 27th); Mr. Peter Finigan, aims and methods of modern dentistry (Dec. 4th); Mr. S. A. Boyd, surgery of the biliary passages (Dec. 11th); and Mr. Arthur Gray, common difficulties in gynaecological diagnosis (Dec. 18th). All the lectures except the first will be at 4 P.M.

British Postgraduate Medical School

Dr. W. B. Coley, of New York, will give an address on post-graduate teaching in America at the school (Ducane-road, Shepherd's Bush, W.) at 12.15 P.M. to-day, Friday, Oct. 11th.

Lectures on Psychology for Nursing Sisters

The matron of Guy's Hospital has made arrangements for a course of 8 lectures on elementary psychology and methods of teaching, to be given to those members of her nursing staff, notably "sisters and other responsible persons," whose duties include the training of probationers. The course is being given by Miss Alice M. Jackson, B.A.

London Hospital Medical College

Chronic pancreatitis has been selected as the subject for the Hutchinson triennial prize which will be awarded in 1938. The conditions of the prize may be obtained from the dean of the college.

British Institute of Philosophy

The presidential address of this institute will be given by Sir Herbert Samuel, M.P., at University College, Gower-street, London, W.C., on Tuesday, Oct. 15th, at 8.15 P.M. He will speak on New Science and Old Philosophy. Application for tickets should be made to the director of studies at University Hall, 14, Gordon-square, W.C.1.

Maternity Home for Southampton

On Oct. 3rd the Minister of Health, Sir Kingsley Wood, laid the foundation-stone of a maternity hom at the Borough Hospital, Southampton.

Sussex Medical and Dental Golfing Society

The sixth autumn meeting of the society was held on Oct. 6th, on the links of the Brighton and Hove golf club. J. Scott Page won the Captain's trophy (3 up) and Gregg and Glover and Wallace and McAleenan tied with a score of 4 up in foursomes against bogey.

Surgical Instrument Manufacturers' Association

The annual dinner of this association will take place at the Holborn Restaurant, London, W.C. (entrance in Newton-street), on Friday, Oct. 25th, at 7 P.M. The principal guest will be Prof. G. Grey Turner.

British Orthopaedic Association

The annual meeting of this association will be held in Manchester on Oct. 25th and 26th under the presidency of Mr. Harry Platt. The main subject for discussion will be fractures of the os calcis. Mr. B. L. McFarland and Mr. W. J. Eastwood will speak on its economic consequences; Dr. E. E. Myers, of Boston, U.S.A., will report the results of attempted reduction in a series of recent fractures; and Mr. R. Ollerenshaw and Mr. A. H. Todd will deal with the treatment of old fractures. A number of short papers will also be given.

A Vocational Filter

An exhibition of scientific aids to management, arranged by the department of industrial co-operation of the British Association, is on view at British Industries House, Marble Arch, London. It is substantially the same as that assembled for the Association's meeting in September, and its aim is to call attention to the new phenomenon of the science of management. One of the exhibits, shown in this country for the first time, is a French device, known as a series of "grilles," for helping to determine occupational fitness. The grilles consist of a number of celluloid charts. All the occupations recognised by the French National Statistical Office have been analysed in regard to the physical qualities they demand, and given an index number which appears in the master chart. Apart from the master chart, there are 32 grilles, each of which relates to a specific physical or physiological characteristic in which the person to be tested may have been found defective. When all the grilles relating to characteristics in which the subject is defective are superposed on the master chart, the index numbers of the occupations for which he has no physical disability are still visible. The grilles may thus be regarded as a medical filter through which people may be passed to ensure that, at any rate, they are not put into vocations for which it can be shown at the outset they are gravely handicapped.

Royal Academy of Medicine in Ireland

Dr. R. A. Stoney has been elected president of the Royal Academy of Medicine for 1935-36, with Dr. T. C. P. Kirkpatrick as general secretary and Dr. William Doolin secretary for foreign correspondence. The general council consists of Dr. E. T. Freeman, Dr. Gibbon FitzGibbon, Dr. W. G. Harvey, Mr. A. A. McConnell, Dr. W. R. O'Farrell, and Dr. J. P. Shanley. The sectional presidents are: medicine, Dr. V. M. Synge; surgery, Mr. Seton Pringle; obstetrics, Dr. J. F. Cunningham; pathology, Dr. W. R. O'Farrell; anatomy and physiology, Dr. J. M. O'Connor; State medicine, Dr. J. A. Harbison; laryngology and otology, Mr. S. H. Law.

German Pharmacological Society

The twelfth meeting of this society will be held in Munich from Oct. 20th to 23rd under the presidency of Prof. Sigurd Janssen of Freiburg. Prof. E. B. Verney, of Cambridge, will open the first discussion, on the renal excretion of mammals and its physiological regulation. Other subjects to be debated are the relationship between chemical constitution and pharmacological action, anaesthesia and basal narcosis, and circulatory stimulants. Prof. Behrens (Dorotheenstr. 28, Berlin, N.W.7) is secretary of the congress.

Medical Diary**SOCIETIES**

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 14th.

United Services. 4.30 P.M. Air Commodore A. V. J. Richardson: Efficiency of Personnel in the Services (presidential address).

TUESDAY.

General Meeting of Fellows. 5.30 P.M.

Pathology. 8.15 for 8.30 P.M. J. C. Mottram: Some Tumours in Fowls by Radiation, I. Muende: Pigment Studies. S. L. Baker: Paget's Disease of the Skin. R. Hare: Classification of Hemolytic streptococci by the Group Precipitin Reaction.

J. Ross: Three Cases of Splenomegaly.

THURSDAY.

Dermatology. 5 P.M. (Cases at 4 P.M.) Dr. H. Haldin-Davis: 1. Papillomata occurring in Creosote Worker. Dr. Bertha Lewis (introduced by Dr. H. C. Semon): 2. Spoon Nails Associated with Cheilitis and Microcytic Anemia. Dr. G. Bamber: 3. Epidermolysis Bullosa. Dr. J. E. M. Wigley: 4. Case for Diagnosis. ? Artefact. ? Radio-dermatitis. Dr. R. Klaber: 5. Folliculitis Decalvans et Atrophicans with Lichen Spinulosus. Dr. Louis Forman: 6. Parapsoriasis. Dr. H. C. Semon: 7. Papillomatosis. 8. Lupus Erythematosus treated with Antileprol.

Neurology. 8.30 P.M. Dr. F. L. Golla: The Nervous System and the Organic Whole (presidential address).

FRIDAY.

Radiology. 7 P.M. Dr. C. G. Teall: Whither Radiology? (presidential address).

Obstetrics and Gynaecology. 8 P.M. Dr. J. W. Burns, Mr. C. M. Marshall, and Mr. D. W. Roy: The Treatment of Breech Presentations with Special Reference to Cases of Extended Legs and Arms. Mr. Aleck Bourne, Mr. Eardley Holland, and Mr. G. F. Gibberd will also speak.

HUNTERIAN SOCIETY.

MONDAY, Oct. 14th.—8.30 P.M. (Simpson's Restaurant, Bird-in-Hand-court, 76, Cheapside), Dr. W. B. Brander: The Challenge of the Sick (presidential address).

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, 26, Portland-place, W.

THURSDAY, Oct. 17th.—8.15 P.M., Sir Arthur Bagshawe: Presidential Address.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

FRIDAY, Oct. 18th.—4 P.M., Sir Henry Dale, F.R.S.: Some Epochs in Medical Research (Harveian oration).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 14th, to SATURDAY, Oct. 19th.—NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W. All-day course in cardiology.

METROPOLITAN HOSPITAL, Kingsland-road, E. All-day course in medicine, surgery.

MEDICAL SOCIETY OF LONDON. Wed., 4 P.M., Mr. Malcolm

Gynaecology.—NATIONAL

Hampstead-road, N.W. Tues., 8.30 P.M., Mr. A. S. Parkes, F.R.S.: Ovary. Thurs., 8.30 P.M., Dr. H. Gardiner-Hill: Thyroid.—ROYAL WESTMINSTER OPH-

THALMIC HOSPITAL, Broad-street, W.C. Tues., 5 P.M., Mr. C. L. Gimblett: Some Points in Medical Ophthalm-

ology. Wed., 5 P.M., Mr. G. G. Penman: Demonstration of Fundi of Medical Interest.—INFANTS HOSPITAL, Vincent-square, S.W. Mon., Wed., and Fri., at 8 P.M., course in anatomy and physiology.—CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C. Sat. and Sun., course in obstetrics. (Open only to members of the Fellowship.)

LONDON HOSPITAL, E.
WEDNESDAY, Oct. 16th.—10 A.M., Mr. Keizer: Epithelial Odontomata and Treatment. 11 A.M., Dr. A. Maitland-Jones: Tuberculosis in Infancy and Childhood. Noon, Dr. M. H. Jupe: X-ray Diagnosis of Pregnancy. 1.30 P.M., Dr. G. Riddoch: Demonstrations of Neurological Cases. 2.30 P.M., Dr. William Evans: Angina Pectoris, its Problems and Treatment. 3.30 P.M., Mr. C. Donald: Present Position of Thyroid Surgery. 4.30 P.M., Mr. Victor Dix: Retention of Urine.

THURSDAY, 10 A.M., Mr. C. B. Goulden: Significance of Ciliary Infection. 11 A.M., Dr. Donald Hunter: Science and Empiricism in Therapeutics. 12 noon, Dr. A. Burrows: X-ray and Radium Treatment of Diseases of the Skin. 1 P.M., Mr. Eardley Holland: The Clinical Applications of Recent Work on the Female Sex-hormones. 2 P.M., Dr. John Parkinson: Cardiac Enlargement. 3 P.M., Dr. Horace Evans: Cases of Renal Disease. 4.15 P.M., Prof. Bulloch, F.R.S.: Medical Periodical Literature (Schorstein lecture).

FRIDAY, 10 A.M., Mr. R. Milne: The Technique of Splints, Crutches, &c. 11 A.M., Mr. N. Patterson: Some Remarks on Bronchoscopy and Oesophagoscopy. 12 noon, Mr. W. S. Perrin: Modern Treatment of Piles. 2 P.M., Mr. R. Howard: Surgical Demonstrations. 3 P.M., Dr. O. Leyton: High Carbohydrate Diets in Diabetes. 4.15 P.M., Dr. G. E. Vilvandre: Some Results of X-ray Treatment.

SATURDAY, 10 A.M., Dr. E. H. Tallerman: Feeding and Management of Young Infants. 11 A.M., Mr. A. M. A. Moore: The Fracture Problem. 12 Noon, Sir James Walton: The Surgery of Jaundice. (Open only to former students of the hospital.)

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.
THURSDAY, Oct. 17th.—9 P.M., Dr. R. R. Trail: Sanatorium Treatment of Tuberculosis.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Oct. 14th.—3.30 P.M., Dr. Kinnier Wilson: Aphasia, Apraxia (2).
TUESDAY.—3.30 P.M., Dr. Purdon Martin: The Cranial Nerves (2).
WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.
THURSDAY.—3.30 P.M., Dr. Riddoch: The Sensory System (2).
FRIDAY.—3.30 P.M., Dr. Bernard Hart: The Psychoneuroses (2).
 Out-patient clinic daily at 2 P.M.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Oct. 16th.—4.30 P.M., Mr. H. P. Winsbury-White: The Etiology of Urinary Calculus.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Oct. 17th.—2 P.M., Dr. Reginald Lightwood: Reticuloendotheliosis. 3 P.M., Dr. A. Signy: Specific Immunisations. (II.). Out-patient clinics daily at 10 A.M., and ward visits (except Wednesday) at 2 P.M.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.6.
MONDAY, Oct. 14th.—10 A.M., medical and surgical wards, skin clinic. 2 P.M., gynaecological and surgical wards, eye and gynaecological clinics. 4.15 P.M., Mr. Green-Armstrong: Mistakes in Diagnosis.
TUESDAY.—10 A.M., medical wards and dental clinic. 11 A.M., surgical wards. 2 P.M., throat clinic. 4.15 P.M., Dr. Konstam: Heart Block.
WEDNESDAY.—10 A.M., children's wards and clinic, medical wards. 2 P.M., eye clinic. 4.15 P.M., Mr. Harvey Jackson: Minor Surgery of the Rectum.
THURSDAY.—10 A.M., neurological and gynaecological clinics. Noon, fracture clinic. 2 P.M., eye and genitourinary clinics. 4 P.M., venereal diseases. Noon, Lecture on Treatment. 2 P.M., throat clinic. 4.15 P.M., Dr. Hugh Gordon: Acne.
SATURDAY.—10 A.M., surgical and children's clinics, medical wards. The lectures at 4.15 P.M. are open to all medical practitioners without fee. Operations and medical and surgical clinics daily at 2 P.M.

UNIVERSITY OF LONDON.
TUESDAY, Oct. 15th.—3 P.M. (University College Hospital medical school), Prof. Charles Singer: Some Important Contributions to Medical Science emanating from University College Hospital.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.
TUESDAY, Oct. 15th.—5 P.M., Dr. H. D. Haldin-Davis: Acne and Rosacea.
WEDNESDAY.—5 P.M., Dr. I. Muende: Histopathology of Common Skin Diseases.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck-street, W.
THURSDAY, Oct. 17th.—8 P.M., Dr. L. A. Rowden: Looking Backward and Looking Forward (pre-idential address).

ROYAL INSTITUTE OF PUBLIC HEALTH.
MONDAY, Oct. 14th, TUESDAY and WEDNESDAY.—4 P.M. Institute of Hygiene, 25, Portland-place, W. Dr. P. Armand-Delille: Problems of Nutrition and Growth. (In English.)

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Keppel-street, W.C.
WEDNESDAY, Oct. 16th.—4.30 P.M., Prof. R. A. Fisher, F.R.S.: Eugenics and National Health.

GENERAL INFIRMARY, Leeds.
TUESDAY, Oct. 15th.—3.30 P.M., Mr. Moir: Demonstration of Surgical Cases.

PUBLIC DISPENSARY, Leeds.
WEDNESDAY, Oct. 16th.—4 P.M., Dr. H. H. Moll: Pneumonia.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Oct. 17th.—4.15 P.M., Dr. R. Ellis: Medical Treatment of Urinary Infections.

ROYAL INFIRMARY, Manchester.
TUESDAY, Oct. 15th.—4.15 P.M., Mr. A. Graham Bryce: Abscess of the Lung.
FRIDAY.—4.15 P.M., Dr. J. Wharton: Demonstration of Ophthalmic Cases.

Appointments

FULD, HEINZ, M.B. Berlin, M.D. Heidelberg, L.R.C.P. Edin., has been appointed Senior Resident Medical Officer at the Birkenhead Municipal Hospital.

HALL, G. S., M.B. Birm., M.R.C.P. Lond., First Assistant in the Neurological Department at the General Hospital, Birmingham.

STRÖM-OLSEN, ROlf, M.D. Wales, D.P.M., Hon. Psychiatrist to the East Ham Memorial Hospital.

Births, Marriages, and Deaths

BIRTHS

BAIFOUR.—On Sept. 27th, at Cowes, I.W., to Ana Balfour, M.B. Edin. (née Van Hoesen), wife of George Macdonald Balfour, M.B. Edin.—a daughter.

BURGESS.—On Oct. 2nd, at Clifton, Bristol, the wife of Norman Burgess, M.D. Camb., of a daughter.

EDWARDS.—On Oct. 4th, in a London nursing-home, the wife of Harold C. Edwards, F.R.C.S., of a son.

MANDOW.—On Sept. 26th, at Sheerness, Kent, the wife of Dr. G. A. Mandow, of a daughter.

NELSON.—On Oct. 4th, at Bentinck-street, W., the wife of Dr. Alan Nelson, of a son.

PRIDIE.—On Sept. 30th, the wife of Kenneth H. Pridie, F.R.C.S. Eng., Clifton, Bristol, of a daughter.

SHARPEY-SCHAFER.—On Sept. 28th, the wife of E. P. Sharpey-Schafer, M.R.C.P. Lond., of a daughter.

MARRIAGES

ALLEN-DUNNE.—On Oct. 3rd, 1935, at St. Wilfrid's Church, Cantley, near Doncaster, by the Archdeacon of Doncaster, the Venerable F. G. Sandford, M.A., assisted by the Rev. W. M. Tatham, M.A., Vicar of Cantley, and the Rev. G. Needham, B.A., Rector of Braithwell, Charles Henry Belton Allen, the Royal Ulster Rifles, only son of Major H. G. Allen, O.B.E., and Mrs. Allen, of Sidecup, Kent, to Katharine Elizabeth Mary Dunne, M.R.C.S., L.R.C.P., only daughter of Dr. A. B. Dunne, J.P., and Mrs. Dunne, of Cantley Lodge, Cantley, near Doncaster.

CHURCHER-NAYLOR.—On Sept. 27th, at Trinity-road Chapel, Upper Tooting, Dr. James C. Churcher, of Haifa, Palestine, to Gladys Louise Naylor, daughter of Mr. Alfred Naylor, Wandsworth Common.

JONES-MCCREA.—On Sept. 28th, at St. Mary Magdalene, St. Leonards-on-Sea, Ivor J. Jones, M.B. Lond., D.P.H., to Margaret, daughter of Dr. B. H. McCrea, of Bargoed, Glamorgan-shire.

O'NEARA-RIDLEY.—On Oct. 3rd, at St. James's Church, Spanish-place, London, D. J. Patrick O'Neara, F.R.C.S. Edin., of Bury St. Edmunds, to Joan Cowell, younger daughter of Mr. A. Paul Ridley, Felixstowe.

RATCLIFFE-GREENALL.—On Oct. 3rd, at St. Jude's Church, Mapperley, Nottingham, Tom Arundel Ratcliffe, B.A., M.B., B.Chir., to Norah, only child of Mr. and Mrs. A. N. Greenall, of Nottingham.

TRIPP-THOMAS.—On Sept. 28th, at St. Paul's Church, Sketty, Swansea, Reginald Christopher Howard Tripp, M.R.C.S. Eng., Flying Officer, R.A.F., to Barbara, elder daughter of Frank Thomas, M.B. Camb., of Swansea.

1885-1935. GOLDEN WEDDING

LEECH-BOWYER.—On Oct. 10th, 1885, at St. Chrysostom's Church, Victoria Park, Manchester, by the Rev. T. N. Carter, M.A., Priestley Leech, M.D. Lond., F.R.C.S. Eng., eldest son of the late John Leech, J.P., to Emmie Melson, only daughter of the late Frances Yates Bowyer, of Manchester, King Cross, Halifax.

DEATHS

FISHER.—On Sept. 28th, at Cleethorpes, W. H. Fisher, O.B.E., T.D., M.D. Camb., Lt.-Col., R.A.M.C. T. (ret.), aged 69.

HUMPHREYS.—On Oct. 1st, at Swansea, William Carr Humphreys, M.R.C.S. Eng., aged 79.

LITTLE.—On Oct. 2nd, at A-bley-gardens, S.W., Ernest Muirhead Little, F.R.C.S. Eng., aged 81.

PAIK.—On Oct. 6th, at Folkestone, Charles Henry Leet Paik, M.B., F.R.C.S. Edin., Lt.-Col., Indian Medical Service (ret.).

SMELLY.—On Sept. 28th, at Hadleigh, Suffolk, Charles Edward Smelly, M.A., M.D. Camb., M.R.C.S. Eng., late of Hertford, aged 81.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts

A RADIUM TELL-TALE

THE intention of Westminster Hospital, at its Annexe in Hampstead, to resume the use of a bomb containing four grammes, or double the quantity of radium now employed, has again raised the question of the safety of the operators, who must be daily in close proximity to this powerful source of radiation. While the new radium bomb will be continually at work for the whole twenty-four hours, no one operator will be concerned for more than a spell of eight hours in each day. During this time he will be required to spend an average of two minutes each hour in adjusting the bomb to the patient; and he may thus himself receive an exposure of sixteen minutes in all in the course of his duties. It is the accumulation of these daily small exposures, continuing for a period of months or even years, which has to be observed and controlled.

Besides the routine precautions always taken—namely, blood examination, regulation of rest and vacations, and, of course, the screening of the radium with heavy metals—it is the intention of the radium department of Westminster Hospital to make a systematic use of a new "tell-tale" which can be carried in the pocket of the operator, and which will reveal, on examination at the end of the day, how much effective exposure the operator has received.

Devised by the physicist of Westminster Hospital Annexe, it is based on principles investigated by research workers in Sweden. When going on duty the operator will take from a cabinet a small tube of elektron metal about two inches long, and in so doing will operate a simple clocking-in apparatus which indicates the time at which he takes possession of his tell-tale; at the end of the period for which he is on duty he will replace the tube and at the same time clock out. Inside the tube is a thin rod of elektron, which is supported on highly insulated amber buttons and charged to about 400 volts. The radiation from the radium which the operator encounters in the course of his work will cause this charge to leak off and the amount that leaks will measure the dose received. It will thus be possible to keep from day to day a complete record of the incidental exposures received by each operator, and to ascertain whether these are within the safe limits or not. If there is an increase in the case of any individual, immediate steps can be taken both to check his methods and to prevent ill-effects; if there is a general increase, then further safeguards must be incorporated in the apparatus. All the tests so far made are said to indicate that the protection now afforded is fully satisfactory.

A MEDICAL SCULPTOR.—A bust of Mr. Tielman Roos, the appeal court judge who as Minister of Justice did so much to reconcile old party divisions in South Africa, was unveiled by General Smuts at Bloemfontein on Sept. 10th. The sculptor was Dr. Joseph M. Coplans, a captain in the South African Medical Corps, who holds a qualification both in medicine and dentistry, and was at one time a student of St. George's Hospital, London.

Vacancies

For further information refer to the advertisement columns
 Ashton-under-Lyne District Infirmary.—H.S. At rate of £150.
 Beckenham, Bethlem Hospital, Monk's Orchard.—Res. H.P. At rate of £150.
 Birkenhead County Borough.—Asst. M.O. £750.
 Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £120.
 Brighton, Sussex Maternity and Women's Hospital.—Res. H.S. £130.
 Burnley, Victoria Hospital.—H.P. At rate of £150.
 Burton-on-Trent General Infirmary.—H.P. and Cas. O. £150.
 Cairo, Egypt, Giza Memorial Ophthalmic Laboratory.—Asst. Surgeon. L.E.800.
 Cancer Hospital, Fulham-road, S.W.—Surgical Registrar.

Cardiff, King Edward VII. Welsh National Memorial Association.—Asst. Res. M.O. for Glan Ely Tuberculosis Hospital. £200.
 City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
 Cobham, Surrey, Schiff Home of Recovery.—Res. H.S. At rate of £200.
 Connaught Hospital, Walthamstow, E.—Hon. Anaesthetist. Clinical Assistant. Also Cas. O. At rate of £100.
 Doncaster Royal Infirmary.—H.S. £175.
 Durham County Council.—District Tuber. M.O. £500. Also M.O. for Earl's House Sanatorium. £450.
 Ealing Borough.—Ophth. Surgeon. £275.
 Godalming, King George V. Sanatorium.—Asst. M.O. £350.
 Goldie Leigh Hospital, Abbey Wood, S.E.—Consulting Physician. £450.
 Halifax General Hospital.—Jun. Res. M.O. £250.
 Hampstead General and N.W. London Hospital; Haverstock Hill, N.W.—H.S. At rate of £100.
 Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Res. Surg. O. At rate of £150.
 Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.
 Hospital for Sick Children, Great Ormond-street, W.C.—Res. H.P. and H.S. Each at rate of £100.
 Ipswich, East Suffolk and Ipswich Hospital.—Res. Surg. Officer. £400. Also H.S. £144.
 Isle of Wight County Council.—Additional Asst. County M.O. £500.
 Jersey General Hospital and Poor Law Infirmary.—Asst. Res. M.O. At rate of £150.
 Kingston-upon-Hull City and County.—Asst. M.O.H. £600.
 Lambeth Hospital, Brook-street, S.E.—Pathologist. £1100-£50-£1300.
 Lancaster, County Mental Hospital.—Temp. Asst. M.O. 7 guineas per week.
 Lancaster Royal Infirmary.—Jun. H.S. At rate of £130.
 Leeds City.—Asst. Clin. Tuber. O. £500.
 Lewisham Hospital, High-street, S.E.—Asst. M.O. £350.
 Liverpool University.—Lectureship in Bacteriology. £400.
 L.C.C.—Technical Assistants. Each 95s.—5s.—120s. a week.
 London Jewish Hospital, Stepney Green, E.—Res. M.O. and H.P. At rate of £150. Also H.S. and Cas. O. Each at rate of £100.
 London Lock Hospital, 253, Harrow-road, W.—Res. M.O. for Male Depts. Also Surgical Reg. for Female Lock Hospital. At rate of £175 and £100 respectively.
 London University.—University Chair of Anatomy at King's College. £1100.
 Manchester Hospital for Consumption and Diseases of the Throat and Chest.—Res. M.O. for Ear, Nose, and Throat Dept. £200.
 Manchester Royal Infirmary.—H.S. to Aural Gyn. and Ophth. Depts. Also 4 H.S.'s. Each at rate of £50.
 Mount Vernon Hospital, Northwood, Middlesex.—H.S. At rate of £150.
 — at Victoria Infirmary.—Res. Anaes- Medical Officer.
 North-Western Hospital, Laven-road, Hampstead, N.W.—Pathologist. £1100-£50-£1300.
 Norwich, Norfolk and Norwich Hospital.—H.S. to Spec. Depts. Also Cas. O. Each at rate of £120.
 Nottingham, Central Mental Hospital.—Jun. Asst. M.O. £350.
 Nottingham Hospital for Women.—H.S. At rate of £150.
 Paddington Metropolitan Borough.—Visiting M.O. 1½ guineas per attendance.
 Portsmouth Royal Hospital.—H.S. At rate of £130.
 Queen's Hospital for Children, Hackney, E.—Dermatologist.
 Rochdale County Borough.—Res. M.O. for Birch Hill Hospital. At rate of £225.
 Royal Air Force Medical Service.—Commissions.
 Royal Dental Hospital of London, 32, Leicester-square, W.C.—Two Part-time House Anaesthetists. 10s. Gd. per session.
 Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.
 St. Albans, Hill End Hospital for Mental and Nervous Disorders.—H.P.'s. Each at rate of £165.
 St. Bartholomew's.—Asst. Neurologist.
 St. Charles'—square, Ladbroke-grove, W.—Asst. M.O. £200.
 St. James' Hospital, Ouseley-road, Balham, S.W.—Asst. M.O. £350.
 St. Mary's Hospital, W.—Second Obstet. Surgeon for Out-patients.
 Salisbury, General Infirmary.—Res. M.O. £250.
 Sheffield, Royal Infirmary.—H.S. Also Aural H.S. Each at rate of £80.
 Stoke-on-Trent, Stansfield Sanatorium.—Res. M.O. £250.
 Surrey County Council.—Jun. Asst. M.O. for County Sanatorium. At rate of £250.
 Swanley Hospital Convalescent Home, Parkwood.—Res. M.O. At rate of £200.
 Tilbury Hospital.—Med. Supt. £200.
 Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Sen. Res. M.O. £200. Also Cas. Sorting O. At rate of £200.
 Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. and Jun. Res. H.S.'s. At rate of £150 and £100 respectively. Also Hon. Asst. Surgeon.
 Willesden General Hospital, Harlesden-road, N.W.—Physio- Therapist. £75. Also Hon. Physician.
 Winchester, Royal Hampshire County Hospital.—H.S. At rate of £125.
 Wolverhampton and Midland Counties Eye Infirmary.—H.S. £150.
 Wolverhampton Royal Hospital.—H.S. At rate of £100.
 York County Hospital.—H.S. to Eye, Ear, Nose, and Throat Dept. £150.

ADDRESSES AND ORIGINAL ARTICLES

BACTERIÆMIA AND ORAL SEPSIS
WITH SPECIAL REFERENCE TO THE
ÆTIOLOGY OF SUBACUTE ENDOCARDITIS

By C. C. OKELL, M.C., M.B. Camb., F.R.C.P. Lond.
PROFESSOR OF BACTERIOLOGY IN THE UNIVERSITY OF LONDON
AND BACTERIOLOGIST, UNIVERSITY COLLEGE HOSPITAL; AND

S. D. ELLIOTT, M.B. Lond.

DEMONSTRATOR OF BACTERIOLOGY, UNIVERSITY COLLEGE
HOSPITAL MEDICAL SCHOOL

The following investigation owes its origin to certain observations made by T. Lewis and R. T. Grant on the relationship of congenital bicuspid aortic valves to subacute bacterial endocarditis. In an important paper¹ on this subject they bring forward evidence to show (1) that in an unselected series of 31 cases of subacute bacterial endocarditis 26 per cent. presented a congenitally bicuspid condition of the aortic valves and (2) that among those reaching adult life and possessing bicuspid aortic valves, 23 per cent. at least die of active endocarditis. From these data they develop the following almost unchallengeable argument:—

"The entry of organisms into the blood stream cannot be regarded as determining the disease, though it is a necessary link in the chain of events. The determining cause is the defective valve which in some way traps and holds the organisms once they have entered. From the standpoint of pathology the importance of the bicuspid valve group is that it indicates the frequency with which innocuous invasions occur amongst the general population. As infective endocarditis is responsible for death in but a very small percentage of adults generally, and as we can conclude that in these invasion of the blood stream is a common event,* we are forced to the further conclusion that such invasions are encountered in the great majority of instances without mishap. Relatively, the normally developed subject is highly immune to the disease, when he is compared with the bicuspid aortic subject, not because the organisms entering are of the wrong kind, not because they enter in insufficient numbers or possess insufficient virulence, not because appropriate general defences are called into play, but because his aortic valve presents no peculiar susceptibility to the lodgment and tenancy of organisms. The same line of reasoning minimises the importance of so-called primary foci of local suppuration in this group, as a cause of established endocarditic infection."

Our object has been to confirm by direct observation this hypothesis of what Lewis and Grant elsewhere in their paper refer to as an "almost physiological entry" of organisms into the blood stream of the average individual.

The Investigation

In searching for the ultimate source of the streptococci concerned in the production of subacute bacterial endocarditis, attention must inevitably be turned to the oral cavity. Practically all observers are agreed that the vast majority of endocarditis streptococci are of the salivary or *Streptococcus viridans* type. These abound in the mouth and its neighbourhood but are only found elsewhere in small numbers and under exceptional conditions; above all it is in conditions of oral sepsis such as pyorrhœa of the gums that this type of streptococcus is found in the greatest numbers.

BACTERIÆMIA FOLLOWING DENTAL EXTRACTIONS

Our first observations were made on the blood of patients undergoing extraction of teeth from both septic and clean mouths. It is admittedly not easy to classify the different varieties of oral sepsis. Gum infection and apical infection are rarely mutually exclusive conditions. We therefore divided the cases roughly into three groups, A, B, and C, shown in Table I.

The blood was examined for bacteria in 138 patients undergoing the operation of extraction of teeth. Ten cubic centimetres of blood were taken from the arm veins immediately before extraction, and another 10 c.cm. within five minutes after extraction. The blood was added to 1·2 c.cm. of 5 per cent. sodium citrate saline. Both samples of blood were usually taken while the patient was under the influence of a general anæsthetic—nitrous oxide, Evipan (intravenous), or ether.

TABLE I
Streptococcal Bacteriæmia Following Extraction of Teeth in 138 Cases

Case group.	Type.	Cases examined.	Result of blood culture after extraction.	Streptococcal colony counts. Average of aerobic and anaerobic cultures.				
				<1 c.c.	1-5 c.c.	6-10 c.c.	11-15 c.c.	>15 c.c.
A	Marked gum disease; multiple extraction.	40	30 ÷ 10 = (75% ÷)	5	17	2	2	4
B	Moderate gum disease; multiple extraction.	60	42 ÷ 18 = (70% ÷)	14	21	4	1	2
C	Without detectable gum disease; extraction of one or more teeth.	38	12 ÷ 26 = (34% ÷)	3	9	—	—	—

+ indicates that streptococci were present in the blood culture.
— indicates that no streptococci were present in the blood culture.
c.c. = per cubic centimetre.

Blood culture technique.—Each sample of citrated blood was distributed as follows. Two 1 c.cm. quantities were plated with 10 c.cm. agar in order to obtain a count of the viable organisms should the culture be positive. The remaining 8 c.cm. of blood was divided into two equal parts, each of which was added to 20 c.cm. of 0·1 per cent. sodium citrate broth. One blood-agar plate and one blood broth were then incubated aerobically at 37° C. for seven days; the remaining implants were incubated anaerobically at 37° C. for the same period. The aerobic cultures were inspected daily for the presence of bacterial growth; it was found that where the culture was positive, growth often first appeared on the third or fourth day of incubation.

It will be seen from Table I. that of 138 cases of dental extraction, 84 (60·9 per cent.) showed a transient streptococcal bacteriæmia after operation, and that in cases considered to be of a severe type of oral sepsis (Group A), the positive streptococcal cultures reached as high a figure as 75 per cent. In all cases where streptococci were recovered the organisms were of the non-hæmolytic type.

Table II. gives a comparison of the results obtained by aerobic and anaerobic methods of blood culture. In the majority of cases where the result was positive streptococci were recovered from the cultures grown under both conditions of cultivation, and in few instances were the organisms

* Meaning that it occurs in many adults.

TABLE II
COMPARISON BETWEEN AEROBIC AND ANAEROBIC METHODS OF BLOOD CULTURE.

Case group.	Type.	Cases examined.	Result of blood cultures after extraction.		Streptococcal colony count.									
					<1 c.c.		1-5 c.c.		6-10 c.c.		11-15 c.c.		>15 c.c.	
			Ae.	An.	Ae.	An.	Ae.	An.	Ae.	An.	Ae.	An.	Ae.	An.
A	Marked gum disease; multiple extraction.	40	27 + 13 - (67.5% +)	26 + 14 - (55% +)	6	5	13	9	5	5	3	1	—	6
B	Moderate gum disease; multiple extraction.	60	36 + 24 - (60% +)	31 + 29 - (51.7% +)	13	4	17	18	4	5	1	1	1	3
C	Without detectable gum disease; extraction of one or more teeth.	38	13 + 25 - (34% +)	10 + 28 - (26% +)	9	—	3	8	1	1	—	1	—	—

Ae. = aerobic.

An. = anaerobic.

c.c. = per cubic centimetre.

+ indicates that streptococci were present in the blood cultures, and — that no streptococci were present in the blood cultures.

found in the aerobic or anaerobic cultures only. None of the streptococci recovered were obligatory anaerobes.

In general, it was found that the occurrence and degree of a bacteraemia depended upon the severity of the gum disease and the amount of damage done at the operation. Of 10 cases where one tooth was extracted and where there was no noticeable gum disease, only one gave a positive streptococcal blood culture after operation; this was one of removal of an impacted wisdom tooth. In 6 cases where two carious teeth were removed from an otherwise normal mouth, 2 gave a positive streptococcal blood culture after operation, the number of colonies growing being less than 1 per c.cm. of blood.

In 10 cases where a positive culture was obtained directly after extraction, a third specimen of blood was taken at a period varying from ten minutes to eight hours after operation. After these intervals the blood was always found to be sterile. The bacteraemia following extraction is thus of very short duration.

Organisms other than streptococci found in the blood following extraction of teeth.—While in the majority of cases non-haemolytic streptococci were isolated in pure culture, in 6 of the 138 cases already described (in which the blood was cultured before and after extraction of teeth), diphtheroid bacilli were found in the blood taken immediately after operation. In 3 of these cases the diphtheroid organisms were in pure culture while in the remaining 3 they were present with streptococci. In no case were these organisms present in the aerobic and anaerobic cultures at the same time; in 5 cases they grew aerobically and in 1 case anaerobically. Two of these cases showed no gum affection. In 2 further cases included in the series of 138, staphylococci were found in the blood taken after extraction. These organisms were of the *albus* type; once they grew in pure culture, while in the remaining case they were mixed with streptococci. In both instances they grew only in the aerobic cultures.

The isolation of staphylococci and diphtheroids, both found so commonly on the surface of the skin, is possibly but improbably to be ascribed to contamination.

PIREXIA FOLLOWING EXTRACTION OF TEETH

In 20 of the cases where teeth were extracted from patients with pyorrhoea, the temperature was taken at half-hourly intervals over a period of twelve hours following operation. In 14 of these patients some degree of pyrexia was found to occur four to nine hours after operation; the temperature usually rose sharply to a level between 99° and 102° F. and remained at this height for two to four hours, after

which it fell abruptly to normal again. In 3 a third specimen of blood was taken during the pyrexial period, but in all it was found to be sterile although streptococci were found in the sample taken immediately after extraction of the teeth. In 3 of the cases where pyrexia was observed the blood culture immediately following extraction was negative, while in 3 where there was no rise in temperature a bacteraemia immediately followed operation. Three further cases showed neither a positive blood culture nor pyrexia following operation.

These observations cannot be said to show any clear relationship between post-operative bacteraemia and pyrexia. The time relationship, however, between the trauma, the bacteraemia, and the pyrexia was very similar to that observed by Barrington and Wright² in connexion with catheter fever, and possibly bears the same interpretation as that suggested by these observers—viz., that the pyrexia follows the bacteraemia at an interval similar to that which elapses between the injection of bacteria or protein into the circulation and the subsequent pyrexia (non-specific shock).

BACTERIEMIA IN RELATION TO DENTAL SEPSIS

The most unexpected of our findings was that in 12 cases streptococci were isolated from a specimen of blood taken before operation. Of these, 9 were amongst the 100 cases of pyorrhoea referred to in Table I. (Groups A and B), streptococci being found both before and after extraction of teeth. The remaining 3 cases were from an additional 10 cases of pyorrhoea in which only one examination of the blood was made, that being before extraction. Thus, among 110 cases of pyorrhoeal disease, 12 (10.9 per cent.) were found to have a streptococcal bacteraemia at the time of examination, irrespective of operative procedures. In 5 cases there was a definite increase in the colony-count of the specimen taken immediately after extraction of teeth, in 1 case there was a diminution in numbers, and in 3 cases less than one colony grew per c.cm. of blood, both before and after operation, so that no change in degree of the bacteraemia could be detected.

The blood of 2 of the patients was examined on two occasions, the tests being separated by an interval of a week. In both patients streptococci were found to be present in the blood on the second but not on the first occasion. In 3 of the 9 cases where streptococci were found in the blood both before and immediately after extraction, the blood

was examined again one to six hours after operation but was then always found to be sterile. It appears, then, that the inflammatory reaction following extraction closes down the field of absorption of organisms.

Organisms other than streptococci found in the blood before extraction of teeth.—In 6 of the 110 cases of pyorrhoeal disease mentioned above, staphylococci were isolated in pure culture from the blood before dental extraction. All six were of a severe type of gum disease. Two of the six staphylococci were hæmolytic for horse blood, one being of the *aureus* type.

THE STREPTOCOCCI

Type of streptococci found in the blood before and after extraction of teeth.—All the organisms classed as streptococci were of typical morphology, showing long or short chain formation. None of the organisms isolated showed the appearances characteristic of hæmolytic streptococci when grown on the surface of horse-blood agar. The positive streptococcal cultures consisted mainly of organisms, surface colonies of which caused some degree of green discoloration of blood pigment, although in a few instances they were mixed with streptococcal colonies which had no observable effect.

The fermentation reactions of 36 of the streptococcal strains isolated were tested with lactose, mannitol, and salicin:—

- 16 fermented lactose only (*salivarius* type of Holman).
- 9 " " and salicin (*mitis* type of Holman).
- 1. " salicin only.
- 10 " neither lactose, salicin, nor mannitol.

The fermentation reactions of a similar number of streptococci recovered from the blood of patients with subacute bacterial endocarditis were as follows:—

- 10 fermented lactose only.
- 9 " " and salicin.
- 7 " salicin only.
- 5 " lactose, mannitol, and salicin.
- 1 " mannitol and salicin.
- 4 " neither lactose, salicin, nor mannitol.

Serology of streptococci recovered from the blood before and after dental extraction.—A detailed study of the serology of streptococci from cases of subacute bacterial endocarditis and their relationship to mouth streptococci will be the subject of a subsequent communication by one of us (S. D. E.). For the present purpose it will suffice to state: (1) that serological matches for streptococci isolated from definite cases of endocarditis are frequently found among streptococci derived from the gums and blood of patients undergoing dental extraction; (2) that in patients where streptococci were found in the blood after, or both before and after, extraction of teeth, organisms of a similar serological nature could in many cases be recovered from the gums; (3) that more than one serological type of non-hæmolytic streptococcus can usually be isolated from the gums of an individual patient; (4) that more than one serological type can sometimes be isolated from the streptococci found in the blood immediately following the extraction of teeth.

Control blood cultures from persons with apparently healthy gums.—Blood cultures have been made from 30 healthy young adults without obvious dental disease. These were all negative. It may also be noted as an additional control to the technique of blood culture that in none of the 38 cases shown in Table I., Group C, as having no detectable gum disease, were organisms found in the blood cultures before extraction.

Discussion

From time to time cases of subacute bacterial endocarditis are met with which follow the extraction of one or more teeth. The foregoing observations indicate the source and mode of infection in such cases. The transient bacteriemia following operative trauma is analogous with that described by Barrington and Wright in catheter fever where *B. coli* was the usual organism isolated from the blood.

More interesting is the observation that in persons with severely septic mouths non-hæmolytic streptococci (mostly of the *viridans* type) may enter the blood stream in the absence of any obvious trauma. Owing to difficulties of access to patients our own observations on this point are very incomplete. We have been unable to ascertain whether the condition of "leak" into the blood stream in the positive cases is continuous, intermittent, or merely a fortuitous single occurrence. Nor have we yet determined whether minor degrees of trauma, such as brushing the gums or chewing, have any effect on the occurrence of the bacteriemia. There are, however, certain implications from which it is difficult to escape. From the nature of the technique it is likely that many cases in which streptococci enter the blood stream were missed. The efficient mechanism which exists for clearing the blood stream of organisms of low virulence no doubt only allows a "leak" of organisms into the circulation to be detectable in blood from an arm vein when the "leak" exceeds a certain magnitude or the organisms are abnormally resistant to phagocytic clearing. The small percentage of cases in which this non-traumatic "leak" was observed probably gives an under-estimate of the risk of streptococci entering the blood of persons with severely septic gums. The bacteriemia observed under these conditions is obviously not an infection of the blood in the ordinary sense but is rather a "leak" of relatively non-pathogenic organisms into the general circulation followed by their rapid removal by the phagocytic action of the body. It is generally admitted that damage or malformation of the valves is a frequent if not a necessary predisposing cause of subacute bacterial endocarditis. It is easy to imagine that the "leak" which is of little account in the normal person might determine the infection of diseased or malformed valves. At least the direct observation of such an invasion of blood as we have described provides a tentative explanation of how streptococci reach the heart valves in cases of subacute bacterial endocarditis and one in agreement with views which are widely held on theoretical grounds.

Summary

(1) Within a few moments after the extraction of teeth from obviously septic mouths, a transient streptococcal bacteriemia lasting a few minutes may be observed in 75 per cent. of cases. (2) Even in patients with mouths showing no obvious gum disease, extraction of teeth is followed by a transient streptococcal bacteriemia in 34 per cent. of cases. (3) Of 110 persons with septic mouths 10.9 per cent. were found to have a streptococcal bacteriemia irrespective of any operative interference. These observations were based on the examination of the blood on a single occasion. (4) The organisms isolated from the blood in the majority of cases were streptococci of the *viridans* type which were culturally and serologically similar to strains derived from the mouth. (5) The possible bearings of these

observations on the aetiology of subacute bacterial endocarditis are briefly discussed.

This work was carried out by one of us (S. D. E.) during the tenure of a grant from the Harmsworth memorial fund. Our thanks are due to Mr. J. L. Dudley Buxton, Mr. A. J. Chiappa Sinclair, and Mr. Arthur Bulleid for their kindness in supplying us with suitable cases for investigation, and to Sir Thomas Lewis, who placed hospital beds at our disposal.

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ACHOLURIC JAUNDICE

THE SERIAL ONSET OF ACUTE BLOOD CRISES IN AN ENTIRE FAMILY

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SINCE Minkowski¹ first drew attention to this interesting disease, the classical clinical signs of acholuric jaundice have been so well described, by Dawson² and others, that mere repetition would be tiresome if not presumptuous. But, as it is far otherwise when we come to deal with the pathogenesis of the condition, particularly the acute hæmolytic crises which not infrequently complicate the picture, a report of such crises occurring serially in all four members of an affected family is considered warranted.

THE FOUR CASES

I

A. B., a girl aged 11, was admitted to hospital on Feb. 22nd, 1934, in a severely collapsed condition.

History of illness (from mother).—On Feb. 19th the girl complained of headache, felt cold, shivery, and sick, but did not vomit. This continued for the next two days when she had no pain apart from the headache. On the 22nd she vomited once: the vomitus was bile-stained but contained no blood. She felt weak and giddy and fainted three times, complaining of visual disturbance when she recovered from these syncopal attacks. She had a motion of the bowels on Feb. 20th which appeared to be normal, and there had been no motion since then. The patient had always been pale but her mother thought that the pallor had increased during the past 12 months, following an attack of jaundice when she had been sick and vomited bile-stained fluid. She had a similar attack three years ago when she was jaundiced for three weeks.

No history of cough or spit, no urinary upset, and there had been no bleeding of any kind.

Condition on admission.—She was found to be a well-formed but rather thin girl with a mongoloid cast of countenance; definite but not marked jaundice of skin and sclerae. She looked pale, ill, and obviously very weak. Temp., 98.8° F.; pulse-rate, 132; resp., 28. The tongue was pale and dry but clean. Teeth were excellent and the fauces normal. The abdomen was symmetrical and moved freely, and there was no tenderness or rigidity. The liver was just palpable and the spleen was felt as a firm smooth tumour 3 inches below the costal margin, on deep inspiration. There was no swelling of lymphatic glands in any area. The heart sounds were poor in quality and a blowing systolic murmur was heard at all areas. Examination of the lungs and nervous system revealed nothing abnormal. Both fundi were pale but showed no hæmorrhages. The urine contained urobilin in excess but was otherwise normal. There was no mæna but the fæces were a deep brown due to excess of stercobilin.

Blood picture on admission.—Erythrocytes, 1,000,000; leucocytes, 7600; colour-index, 1; halometer reading,

6.4 μ ; fragility was increased, the range being from 0.5 to 0.45, and the van den Bergh gave a negative direct but positive indirect reaction. Stained films showed anisocytosis and microcytosis, most of the red cells having the typical deeply stained bulging appearance. No reticulocytes were seen. Differential count:

Polymorphs . . 57% Eosinophils. 3% Large monos. . 5%
Lymphocytes . 20% Basophils . . 3% Myelocytes . . 12%

Course of illness.—During the next 48 hours the girl's condition became highly critical with increasing pallor, dyspnoea, and delirium. The temperature was 101° F., pulse-rate 140, and respirations 34, and in an effort to save her life she was transfused on Feb. 24th with 16 oz. of citrated blood. There was no immediate improvement in the clinical condition, but ten days later, while the jaundice was much more obvious, the pallor was less marked, although the child was still very ill and blood examination revealed no reticulocyte response. During the next four days her condition improved gradually and the spleen diminished *pari passu* with this improvement. Convalescence was slow and was interrupted on March 18th by an attack of perisplenitis accompanied by a sharp rise of temperature to 102° F. associated with acute pain over the enlarged spleen and audible friction.

The progress of the blood condition is shown in Table I.

TABLE I

Van den Bergh: +ve indirect on each date.

Date.	Hb.	R.B.C.	W.B.C.	C.I.	Reticulo- cytes.	Fragility range.
Feb. 22	(p.c.) 20	(millions) 1,000	7,600	1.0	(p.c.) Nil.	0.5-0.45
" 24			Transfusion.			
Mar. 5	46	2,300	8,000	1.0	20	0.65-0.45
" 9	48	2,420	8,200	1.0	22	"
" 12	52	2,580	8,400	0.95	25	"
" 27	63	3,320	10,000	1.0	25	"
Apr. 4	61	3,520	7,400	0.87	25	"
" 10	60	3,690	8,500	0.83	25	0.5-0.45

Hb. = hæmoglobin. R.B.C. = red blood-cells. W.B.C. = white blood-cells.

II

B. B., aged 9, sister of the first patient, was admitted to hospital on March 4th, 1934, as an urgent case of collapse with the following history. She had always been pale with a slight icteric tinge of skin and sclera but had never been grossly jaundiced. Apart from this she had enjoyed good health and had missed very few days at school. On the morning of March 3rd, 12 days after her sister took ill, she looked pale and on rising from bed fainted and was unconscious for a short time. She fainted again in the evening and was very weak. Next day she felt slightly better but complained of headache and was very restless. This continued until the night of March 5th-6th when she became delirious and vomited continuously. Bowels had been regular and there was no evidence of gross mæna. No history of cold in the head or exposure to infection.

On admission she was found to be a well-nourished child for her age, definite greenish-yellow, or "daffodil," tinting of the skin and sclerae. Her temperature was 100° F., pulse-rate 152, and respirations 40 per minute. Her breathing was rapid and shallow and she was desperately pale. She cried out in her delirium and presented some of the features of the typhoid state. The tongue was clean and the teeth were good. The palatal arch was high and the mucous membranes very pale. The fauces were normal apart from the pallor. The liver was not palpably enlarged, but the spleen was just felt below the costal margin. There was no obvious enlargement of the lymph glands. A soft blowing systolic murmur was heard all over the precordium and a very short diastolic murmur was audible over the sternum. The pulse was small, soft, and rapid. The urine contained urobilin in excess and a slight trace of albumin.

Examination of the blood showed: erythrocytes, 820,000 per c.mm.; hæmoglobin, 16 per cent.; colour-index, 1; leucocytes, 11,000; halometer reading 6.3 μ ; fragility range, 0.45-0.35; no reticulocytes were seen. Stained

films showed marked microcytosis, with well-stained red cells of globular shape; slight poikilocytosis. Many normoblasts and a few megaloblasts were seen. Differential count:

Polymorphs .. 72% Eosinophils. 3% Large monos.. 5%
Lymphocytes . 14% Basophils .. 1% Myelocytes .. 5%

Her serious condition calling for immediate transfusion, she received a pint of citrated blood, and showed an immediate and marked improvement: temperature 98.4° F., pulse-rate 102, respirations 20. Table II. shows the progressive improvement in the blood condition.

TABLE II

Van den Bergh: +ve indirect on each date.

Date.	Hb.	R.B.C.	W.B.C.	C.I.	Reticulo- cytes.	Fragility range.
Mar. 6 (A.M.)	16	820,000	11,000	1.0	(p.c.) Nil.	0.45-0.35
" (P.M.)						
" 7	28	1,400,000	15,000	1.0	4	0.45-0.35
" 12	45	2,200,000	29,000	1.1	7	
" 21	50	2,500,000	14,000	1.0	10	0.65-0.45
" 27	60	3,140,000	10,000	1.0	8	0.45-0.35

III

C. B., aged 5, a younger brother of the two previous patients, was admitted to hospital on March 11th, 1934, for observation in view of the experiences of his sisters. At birth, and for six months after, he had been jaundiced and had always been pale. He enjoyed fair health in spite of his pallor and has never again been noticed to be jaundiced. On March 8th, 15 days after A. B. and five days after B. B., he complained of feeling unwell. He felt tired and languid but had neither headache nor digestive upset.

On examination: Temp., 101.8° F.; pulse-rate, 140; resp., 28. He was found to be a small poorly developed boy, extremely pale, and with a slight icteric tinting of the skin and sclerae. He showed no cyanosis, oedema, or dyspnoea, but had a bright malar flush. Mentally he was very bright but rather nervous. Fauces were normal, but the palatal arch was high and his teeth were badly decayed. There was slight general tenderness over the abdomen without rigidity. The liver was not palpably enlarged, but an enlarged, smooth, firm spleen could just be felt. There was no obvious enlargement of the lymphatic glands. The pulse was regular in rhythm, rapid and of small volume and low tension. There was conspicuous precordial pulsation and soft systolic murmurs were heard at all areas. Nothing abnormal was detected in the respiratory or nervous system. The fundi were pale but showed no hemorrhages. The urine contained an excess of urobilin and later an occasional faint trace of albumin.

TABLE III

Van den Bergh: +ve indirect on each date.

Date.	Hb.	R.B.C.	W.B.C.	C.I.	Reticulo- cytes.	Fragility range.
Mar. 11	(p.c.) 23	850,000	4,200	1.3	(p.c.) 2	0.45-0.35
" 12	20	810,000	4,800	1.2	2	0.65-0.45
" 13	18	800,000	5,000	1.1	2	"
" 14						
" 15	25	1,500,000	10,000	0.83	10	0.45-0.35
" 25	41	2,780,000	12,000	1.0	15	
Apr. 9	45	3,200,000	5,200	0.7	8	0.65-0.45

Blood examination showed: erythrocytes, 850,000 per c.mm.; leucocytes, 4200; haemoglobin, 23 per cent.; colour-index, 1.4; halometer reading, 6.3μ; reticulo-cytes, 2 per cent.; fragility range, 0.45-0.35; van den Bergh indirect positive. Films showed microcytosis, macrocytosis, and an occasional normoblast.

Hepatex P.A.F. was given intravenously for the next two days but as anticipated there was no improvement in the blood picture or the clinical condition, and again transfusion had to be resorted to on March 14th when

he received 10 oz. of citrated blood. Table III. shows the subsequent improvement in his condition.

IV

On March 15th D. B., a boy of 7, and the last member of the family, was, like the previous patient, admitted for observation and investigation. He had always enjoyed fair health, had never been noticeably jaundiced, and had taken a very active part in all the games at school. Recently his mother had noticed that he was short of breath on slight exertion and his colour was not so good. On March 12th, four days after his younger brother, he was obviously tired and listless but made no complaint.

On examination he was seen to be a well-developed but pale boy with a slight icteric tingeing of the skin and sclerotics. There was no cyanosis, oedema, or glandular enlargement. Tongue was clean, teeth good, and nasopharynx normal. The liver was not palpably enlarged and the tip of the spleen could just be felt below the costal margin, being smooth and firm and not tender. The pulse was regular in rhythm, of low volume and poor tension. The heart sounds were of fair quality, but a loud blowing systolic murmur was heard all over the precordium and of maximum intensity at the base. Respiratory and nervous systems were apparently normal. On admission his temperature was 98.4° F., his pulse-rate 128, and his respirations 28 per minute. His urine contained urobilin in excess and his faeces had the usual "cocoa powder" reddish-brown colour.

His blood picture on March 11th, four days before admission, showed: erythrocytes, 2,600,000; leucocytes, 8900; haemoglobin, 58 per cent.; colour-index, 1.1; halometer reading, 6.2μ; reticulo-cytes, 2 per cent.; fragility range, 0.55-0.45; van den Bergh indirect positive.

Here again in an effort to stave off the apparently inevitable crisis, intravenous hepatex was administered but without effect. He was transfused two days after admission, receiving 15 oz. of citrated blood, with an immediate improvement in his clinical condition. Stained films showed the usual dark-staining microcytes, many megalocytes, and numerous normoblasts. The progress of the blood picture may be seen from Table IV.

TABLE IV

Van den Bergh: +ve indirect on each date.

Date.	Hb.	R.B.C.	W.B.C.	C.I.	Reticulo- cytes.	Fragility range.
Mar. 11	(p.c.) 58	(millions) 2,600	8,900	1.1	(p.c.) 2	0.55-0.45
" 16	26	1,480	4,400	0.92	2	0.65-0.55
" 17						
" 28	29	1,400	20,000	1.0	40	0.45-0.35
Apr. 3	28	1,370	5,800	1.07	25	"
" 9	30	1,840	7,500	0.83	15	
" 27	50	3,700	8,000	0.67	10	
June 23	50	3,200	6,500	0.75		

This boy's convalescence was interrupted by an attack of acute tonsillitis on March 28th, which had an obvious slowing effect on his hemopoiesis.

FAMILY HISTORY

Mother and father enjoy good health but the father (Mr. B.) has always had a "curious" complexion and gave a history of having been admitted to hospital in 1929, following an attack of what may have been biliary colic when it was discovered that he had an enlarged spleen. At that time his blood picture showed: erythrocytes, 5,300,000; leucocytes, 8500; haemoglobin, 80 per cent.; colour-index, 0.75; but his fragility range had not been investigated.

When he came to hospital in connexion with the admission of the first patient his complexion at once confirmed the provisional diagnosis of hemolytic family jaundice.

On examination Mr. B. was found to be a slimly built man of 45 with a curious café-au-lait complexion. There was definite icterus of skin and sclerotics. The liver was 2 inches below the costal margin and the spleen was felt as a hard, firm tumour 3 inches below the costal margin,

but there was no tenderness over either organ. There was no evidence of leg ulceration or skeletal changes.

Blood examination (March 10th) showed: erythrocytes, 3,600,000; leucocytes, 11,000; hæmoglobin, 80 per cent.; colour-index, 1.1; halometer reading, 6.2 μ ; fragility range, 0.6-0.45 per cent.; van den Bergh—a delayed direct and positive indirect.

He is the youngest of a family of nine—six brothers and two sisters, one brother having died in infancy (cause of death not known)—and states that his father also had what came to be called the "family" complexion. One sister and one brother are known to have enlarged spleens and the former shows an increased range of red cell fragility, but these two enjoy good health as do the other members of the family, and there has been no history of any parallel happenings in their families.

Mrs. B., the mother of the four children described above, is a healthy looking woman of 40, and her blood picture showed: erythrocytes, 3,900,000; leucocytes, 6000; hæmoglobin, 79 per cent.; colour-index, 1; fragility range, 0.45-0.35 per cent.; van den Bergh—both reactions negative. She has never been jaundiced.

COMMENTS

During their stay in hospital, when they had obviously recovered from the acute hæmolytic crisis, the four patients presented many features in common. Their colour varied from day to day—from hour to hour almost—and the same applies to the degree of splenic enlargement. In this connexion it seemed to me that, after they had passed the critical stage of the illness, they appeared to be better clinically when their spleens were relatively large, and this, I think, is what one would expect.

There was no evidence clinically or radiologically of the "tower-shaped" skull or other skeletal deformity described by Günsslen² and others, but the palatal arch seemed to be higher than normal in all four. One (A. B.) had a mongoloid cast of feature due to the smallness of the palpebral fissures and the angle at which they were set. Her sister (B. B.) had crowding and malformation of her teeth, which however showed no sign of caries. The blood Wassermann was negative in all four patients. They all passed huge bulky motions, particularly after their transfusions, and these showed the characteristic dark brown colour due to excess of stercobilin.

The girls were dismissed from hospital on May 18th and the boys on June 7th, on the understanding that they were to undergo splenectomy in the near future, to which their parents very bravely agreed.

DISCUSSION

So far as I am aware serial crises in hæmolytic family jaundice have not figured prominently in the literature. Vaughan,⁴ in discussing the ætiology of acholuric jaundice, mentions the case of a father and son who fell acutely ill on the same day and were admitted to hospital with a diagnosis of food poisoning or septicæmia. More recently Murray-Lyon⁵ reports the case of two brothers whose story is quite parallel to my series except that the question of Lederer's anaemia was raised because of the low reticulocyte count in the elder of his two patients. But that the low reticulocyte count is evidence that hæmopoiesis is failing to keep pace with the rapid blood destruction is well seen in Table IV. of this series when the patient was admitted before the actual crisis occurred. As soon as the patient has been tided over the crisis, there is a marked rise in the reticulocytes. In each of the four cases described above the initial reticulocyte count was low and only rose when the crisis was over.

The release of what Vaughan⁴ aptly calls "the trigger mechanism" appears to be the most interesting feature of these crises. From the clinical description of these four cases it will at once be appreciated that no adequate cause, such as common infection, was discoverable. The parents were firmly of opinion that emotion played a large part in Cases II., III.,

and IV., and Piney⁶ states that "the onset of such crises is often preceded by psychic disturbances, such as rage." But if we accept this "sympathetic" view of the onset in Cases II., III., and IV., we are still left with the difficulty of accounting satisfactorily for the onset in Case I.

I am glad to be able to record that all four children have since (September, 1934) been successfully operated on by Mr. Alexander McLennan in the Royal Hospital for Sick Children, Glasgow, and the effects of splenectomy on their blood pictures have been fully investigated by Dr. W. T. W. Paxton, whose results will be published in due course.

It gives me great pleasure to express my thanks to Dr. Douglas W. Russell, for permission to publish these case records. I am indebted to Dr. Archibald P. Robertson, our then house physician, for his painstaking work in connexion with the blood examinations.

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HODGKIN'S DISEASE IN NATIVES OF NIGERIA

RESULTS OF THE BIOLOGICAL TEST

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THE biological test for lymphadenoma, as described by Gordon,¹ is a valuable addition to the clinical and histological methods of diagnosis of this malady. The average Nigerian dislikes long periods in hospital and unless dramatic results ensue from treatment he is prone to return to his farm, usually far distant, and the native "doctor." It is often, therefore, impossible to keep such people under observation for long periods and clinical histories are either unreliable or are too meagre to be of any real value. The removal of a gland for examination is usually possible and is now done as a routine in suspected cases, and the diagnosis is based upon the histological findings combined with the results of the biological test in rabbits. Material from out-stations can be forwarded in phenolised broth (0.5 per cent.), as it has been shown by Gordon that the sensibility of the test is in no way impaired by the presence of phenol in this dilution.

The present paper is an attempt to summarise the findings from material from nine cases of lymphadenoma in Africans.

Diphtheroid bacilli have been implicated in the ætiology of Hodgkin's disease by Bunting and Yates² (1913) and in four of the cases under review an investigation was made for these organisms. In three instances the glands were received in formalin so that histological examination only was possible.

Age and sex.—No history was obtained with three of the tissues examined. Five of the patients were males, two being boys aged 10 and 14, and two adults, aged 25 and 35. The remaining one was an adult female.

Site.—Generalised enlargement was noted in three of the cases. Cervical enlargement only in one, cervical and axillary only in a second, inguinal and deep abdominal in a third.

Duration.—So far as could be ascertained from the scanty information available, the duration varied from six months in the abdominal and cervical cases, to three years in the one with cervico-axillary involvement.



FIG. 1.—Hodgkin's disease in an adult female. Asymmetrical cervical enlargement.

If several glands had been removed, one was immediately placed in Bouin solution for histological purposes. If only one gland was available, a portion was excised with sterile scissors and placed in the fixing solution; the remaining glands, or portion of a gland, were retained for bacteriological investigation. In the last three cases to be examined, material was preserved for the biological test also.

The bacteriological examination had a two-fold object, first, to exclude the possibility of infection with tubercle bacilli, and second, to show whether organisms of the diphtheroid group were present. To accomplish this a portion of the gland was ground up in a Griffith's tube with a few drops of nutrient broth, and when it was sufficiently emulsified, 0.5 c.cm. was drawn up into a syringe of a suitable size and inoculated into the mammary region of a female guinea-pig. Three animals were used for a test.

A further portion of gland tissue was ground up in a similar manner and the emulsion so obtained was inoculated direct, by means of a platinum loop, into flasks of 50 c.cm.



FIG. 2.—Left: a strain of diphtheroid organism isolated from patient (Fig. 1). Right: a ten-day culture of the same organism showing involution forms.

capacity containing serum- (sheep) agar. Anaerobic plates were then poured after the method described by Krumwiede and Pratt. Loopfuls of the emulsion were further stroked on to blood-agar and serum-agar slopes. This part of the technique was omitted in two of the cases investigated as it was found that these aerobic cultures always became overgrown with organisms of the spreading

type. In addition, a portion of the gland from each of the three last cases was ground up in a sterile mortar, a weighed amount (1.0 gramme) was diluted with nutrient broth in the proportion of one to five and was then stored at freezing temperature for five days. After this the emulsion was allowed to remain at 27° C. for one hour and was then further diluted with nutrient broth to 1 in 20 and

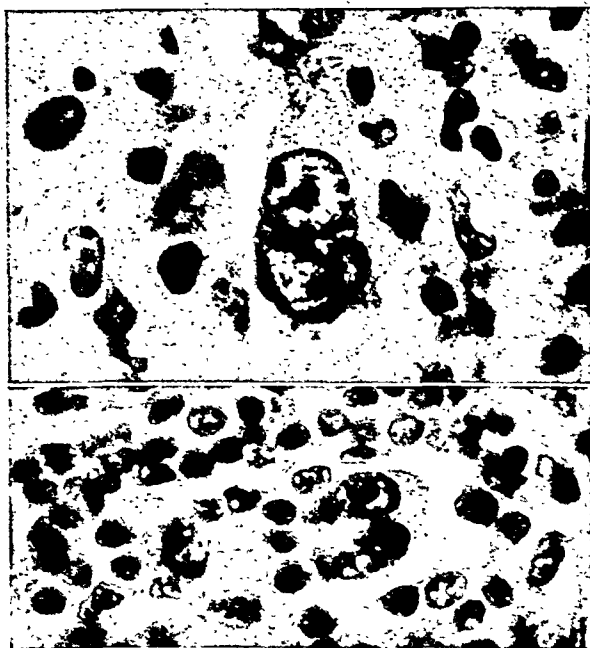


FIG. 3.—Photomicrographs of section of a gland from patient (Fig. 1) showing types of giant-cell encountered.

inoculated into rabbits in the manner described by Gordon. Two to four rabbits were used for each test. In one of these three cases, that in which there was enlargement of the inguinal and deep abdominal glands, some of the ground-up gland material, after drying in vacuo over calcium chloride, was transferred to a sealed tube and kept at 27–29° C. in the dark for one month.

HISTOLOGICAL EXAMINATION

Paraffin sections were prepared and stained by hematoxylin-eosin and by the Giemsa method. The accompanying photomicrographs illustrate the type of lesion found. All the characteristic features of lymphadenoma—i.e., the distortion of the normal glandular tissue, fibrosis, the presence of cells of an unusual form such as the Hodgkin type of giant cell, and infiltration with eosinophil cells—were present in varying degrees. Too much importance must not be attached to excessive infiltration with eosinophil cells when dealing with tissues from natives, since the coexistence of a filarial infection or of intestinal parasites is of frequent occurrence, and here a differential blood count is of value. Fibrosis was present to an extreme degree in an axillary node from a case (No. 25S/33) of generalised enlargement of the lymph glands. The fibrous tissue had proliferated so much that it replaced almost the entire substance of the gland. Here and there remained small groups of round cells with scanty multinucleate forms and a very occasional eosinophil. Dr. Gordon regarded this section as being very suggestive of "Hodgkin in the fibrotic stage." The results of the biological test, described later, are of particular interest. Unfortunately it was not possible to follow up this case clinically. It is worth noting that, in macroscopic section, the glands in the earlier stages

of the disease presented a typically homogeneous, faintly lobulated surface of a deep yellow colour, as contrasted with the dense white appearance exhibited by glands affected with a true neoplastic growth.

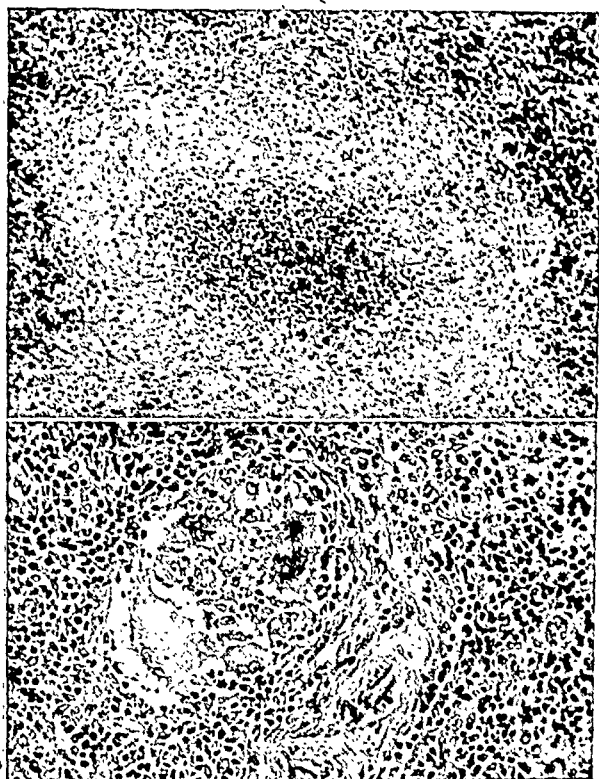


FIG. 4.—Photomicrographs showing types of lesion seen in sections. Above: area of necrosis with polymorph cell infiltration. Below: fibrotic area with well-marked giant cells of the "foreign body" type.

BACTERIOLOGICAL EXAMINATION

The inoculated guinea-pigs were examined at weekly intervals up to three months. Local induration and slight swelling of the region occurred in all of the animals within the first month. The swelling and induration gradually subsided and when the animals were examined post mortem no evidence of tuberculous or other infection was found.

Anaerobic plate cultures.—After two days' incubation at 37° C. the cultures were examined with a binocular microscope and by transmitted light. Three types of colony could usually be distinguished.

(a) Large dense lens-shaped colonies composed of Gram-positive cocci, presumably staphylococci.

(b) Pale translucent irregular or polyhedral-shaped colonies (composed of Gram-negative rod-like bacilli).

(c) Minute lens-shaped or rounded colonies, composed of Gram-positive bacilli showing well-marked beading when stained by Giemsa and resembling in general the text illustration given in Ford² of *Corynebacterium hodgei* (Bunting and Yates).

Colonies of this third type were fished from the plates and were subcultured upon serum-agar and upon blood-agar slopes, the latter containing potassium tellurite. Minute colonies were observed within 48 hours, those on the media containing potassium tellurite being of an intense black colour. Further subcultures, made upon serum-agar, yielded more rapid growths; colonies, visible to the naked eye, being obtained within 12 hours. In four-day and

ten-day cultures, maintained upon the same medium, the organism showed well-marked pleomorphism, beading, and involution forms.

EXPERIMENTAL INOCULATION OF THE ORGANISM INTO ANIMALS

Cultures of a strain of the diphtheroid organism, obtained in the manner outlined above, were used for experimental inoculation into guinea-pigs, rabbits, and monkeys (*Macacus rhesus*).

Guinea-pigs.—Six animals were inoculated subcutaneously, the inoculum consisting in each instance of an actively growing 48-hour serum-agar culture washed off with approximately 1 c.cm. of nutrient broth. No pathogenic action was observed.

Rabbits.—Four animals were used. Two received subcutaneous inoculations, the inoculum being the same as for the guinea-pigs, and two received intravenous inoculations, each inoculum consisting of 0.5 c.cm. of a broth "washing." No pathogenic effects were observed up to a period of six months.

Monkeys.—Four *M. rhesus* were employed. Two received bi-weekly injections into the subcutaneous tissues of one axilla over a period of eight weeks. Two received weekly intravenous injections for a period of six weeks. The inoculum in each instance consisted of a broth "washing." The animals which received the axillary inoculations exhibited palpable glands in both axilla at the end of three weeks. No change was observed in the animals which had received the intravenous inoculations. A specimen of blood-serum was obtained from one of the monkeys at the end of six weeks and it was found to possess an agglutinating titre of 1/1440 for the strain of diphtheroid bacilli used for the intravenous inoculations. No agglutination was obtained with other strains of diphtheroid bacilli isolated from lymphadenomatous material. Living suspensions were employed in these agglutination tests.

One of the animals which had received axillary inoculations was killed and examined post mortem at the end of ten weeks. Symmetrical enlargement of the axillary nodes was found, the glands were soft and varied in size from a pea to a hazel-nut. They were embedded in vascular granulation tissue and showed no tendency to become adherent or to suppurate. Beyond slight enlargement of the spleen there was no other finding of note. Smears were made from the freshly cut surface of several of the enlarged glands and small fragments were inoculated upon serum-agar and blood-agar slopes. No organisms were seen in the smears when suitably stained and the cultures were negative after 48 hours' incubation at 37° C. Paraffin sections were prepared from a few of the larger nodes and were stained by hæmatoxylin and eosin. On section there was some thickening of the capsules of the glands and slight generalised fibrosis. The follicles were prominent and contained many cells in the process of mitosis. The reticulum was infiltrated with round cells, plasma cells in clusters (Pyronin methyl-green stain), and scanty polymorph cells. The condition in general suggested a non-specific inflammatory reaction. The other animal which had received axillary inoculations showed gradual regression of the glandular enlargement and six months later appeared to be normal.

METHOD AND RESULTS OF BIOLOGICAL TEST

The biological test was performed on three occasions with tissues received from cases thought to be suffering from lymphadenoma and on four occasions with material not originating from cases of Hodgkin's disease. A brief note on these "controls" may not be out of place.

In the first the material consisted of portion of a gland which had been removed from a young male native suffering from generalised glandular enlargement and swelling of the testis. The histological appearance suggested spindle-celled sarcoma, but the tissue was degenerate and difficult to stain. A biological test was made using two rabbits and the result was negative.

A portion of the testicular growth was obtained later and a part of this tissue was also used for a biological test, again with negative results. The histological appearances, however, left no doubt as to the true nature of the condition—i.e., sarcoma.

The third "control" consisted of tissue from multiple nodular growths of the skin. The histological structure was typical of the type of sarcoma known as Kaposi tumour. The biological test was negative.

The fourth control from a case at autopsy consisted of enlarged abdominal glands. Histological study of the spleen revealed an advanced form of sickle-cell anaemia. The biological test (three rabbits employed) was negative.

In two of the tests with material from suspected cases of lymphadenoma, typical results were obtained, the rabbits coming down with well-marked paralytic symptoms from the fourth to the seventh day following intravenous and intracranial inoculation of the material. Before the development of the typical paralysis with positive Romberg sign, a loss in weight, averaging 220 g., always occurred. It was also observed in positive cases that an animal placed on the floor in the usual sitting position, and suddenly turned completely round, always showed signs of loss of balance, being unable to regain control of its movements for 30 seconds or longer. The test, apart from its easy application, was found to constitute a reliable early indication of the progress of the condition. Material from one of the positive cases was, as already stated, kept in a sealed tube in the dried state for one month. It was then divided into two portions, one being sent to England where its potency for rabbits was confirmed by Dr. Gordon. The second portion was redissolved in a few c.cm. of nutrient broth and was then inoculated into four rabbits and two monkeys (*Macacus rhesus*). Two of the rabbits received intracranial inoculations only. All four rabbits developed typical paralysis on the fifth or sixth day after inoculation. The monkeys showed no evidence of having been inoculated.

The histological findings in these two cases fully confirmed the results of the tests in rabbits. It is interesting to note that, in one of the cases, sections prepared from the gland received were not typical of Hodgkin's disease. When the biological test gave a positive result with the remainder of this gland, a further specimen was obtained from the case. This second gland was considerably larger than its predecessor and presumably the condition was in a more advanced state since the histological appearances were now characteristic of lymphadenoma.

The third case (258/33) must be regarded as doubtful, both from the histological findings, already noted, and from the results of the biological test.

The gland from this case was received in 0.5 per cent. phenol broth, having taken eight days to arrive from an out-station. Cultures were made from it on arrival on serum-agar and in nutrient broth and were found to be sterile after 48 hours' incubation at 37° C. The gland was ground up in the usual way, emulsified in nutrient broth in a dilution of 1 in 5, and after storing for 24 hours at freezing temperature the suspension was inoculated intracerebrally and intravenously into two rabbits. These remained apparently normal with no loss in weight for a period of 40 days from the date of the inoculations. They then showed a loss in weight of 210 g. and 250 g. respectively, they exhibited a swinging temperature varying from 100° to 104° F. over a period of four days, and at the same time they developed a typical spastic paralysis with an extremely well-marked Romberg sign. The animals took no food, were obviously in a cachectic condition, and were eventually chloroformed. At autopsy no gross lesion was found, cultures from the spleen and heart's blood were negative, and sections of the brain revealed no histological lesion beyond well-marked

congestion. A passage of brain material was then made into two rabbits and 12 white mice with negative results.

Though the results suggest an unusual form of delayed reaction the possibility of a spontaneous outbreak of some form of virus infection must be considered. Against this hypothesis, however, is the fact that the remaining stock of rabbits did not show any evidence of a generalised infection at the time.

SUMMARY

Eight certain and one doubtful case of lymphadenoma are reported from Lagos, Nigeria. In six of these the diagnosis was based upon histological findings alone, whilst in three the biological test was carried out in addition. The test was definitely positive in two of the cases. The third case was not typical histologically and must be regarded as doubtful. Tissues from non-lymphadenomatous conditions were used as controls for the biological test in four instances, the results being negative. Material from four of the cases under review was investigated for the presence of diphtheroid bacilli and the organism was isolated in all. Cultures of one strain of the organism were used for animal inoculations with negative results.

I am indebted to Dr. W. B. Johnson, director of medical services for Nigeria, for permission to publish; to Dr. M. H. Gordon, of St. Bartholomew's Hospital, London, for his kindness in personally demonstrating the technique of his test; to Prof. E. H. Kettle for his opinion on the sections from the cases reviewed; to the director of the Rockefeller Yellow Fever Commission for the use of the *M. rhesus* monkeys; and finally, to those medical officers who kindly sent material for examination.

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A CASE OF CONGENITAL DEFECT OF THE STERNUM

By A. JORDAN, D.Sc. Strasbourg

A SYRIAN tobacco-planter, aged 60, fell down stairs and broke his right humerus. He was admitted to St. Bartholomew's Hospital under the care of the surgical professorial unit on Sept. 5th, 1934, when it was discovered that he had no sternum. He was a short, very fat man. All his life he had been aware that the skin on the front of his chest advanced and receded during respiration. This abnormality was not the result of accident. He did not know of any similar defect or other congenital anomaly in his family.

THE THORAX AND RESPIRATORY MOVEMENTS

During inspiration the skin over the sternum receded to such an extent as to cause a marked depression; during expiration it became slightly raised. The two sterno-clavicular joints could be palpated but between them no bone was felt. On each side the clavicle joined a bar of bone which descended as the well-defined lateral boundary of the deficiency, being joined by the costal cartilages of that side. The defect was continuous with the front of the neck above. Below the fourth costal cartilages it was not possible to determine the presence or absence of bone in the midline. The

pleurisy 24 times. Of these, 20 are well to-day. It does not appear, therefore, that this is a serious complication. In fact, it may be of great advantage [by serving as a collapsing medium, as the example related in Fig. I. shows. This patient is in excellent health to-day with no symptoms and no bacilli.

As it has been suggested that diathermy (D.) is

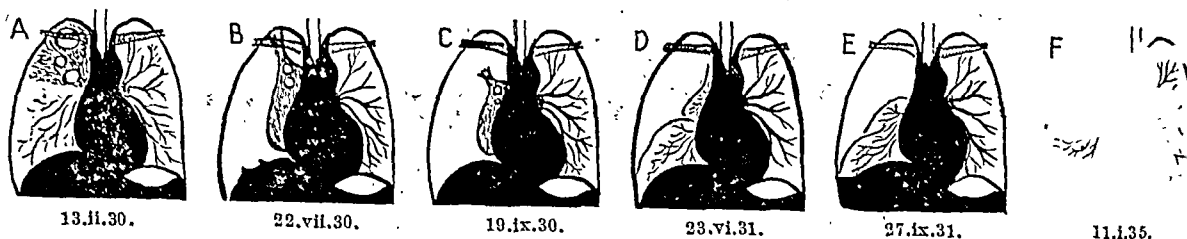


FIG. I.—Serial radiograms of female, aged 16. (A) Extensive disease with gross cavitation. (B) Incomplete and pneumothorax. (C) Adhesions cut. (D) Obliterative pleurisy commencing. (E) Fluid appearing. (F) This gradually increased in amount and was pushed up towards the apex, where it has remained unabsorbed.

more apt to produce an effusion than the electro-cautery (E.C.) the following figures are given:—

Type of current.	Times employed.	Fluid appeared.
E.C. alone	28	4 (14%)
D. alone	35	8 (23%)
D. and E.C. combined	47	12 (25%)

The differences in these figures are probably of little or no significance, as I have used the electro-cautery alone only for the easier and non-vascular adhesions.

Surgical emphysema occurred 42 times: slight 31, moderate 6, much 5.

Temperature Reaction.—Often there is no reaction at all. Frequently a slight fever occurs, 99° to 99.5° F., usually 24 hours after the operation and lasting for one day. Occasionally the temperature may rise to as high as 103° and become normal in three days. More prolonged febrile reactions have been experienced 15 times, including the empyema cases; in most instances the temperature was normal again in 5 or 6 days' time.

EMPHYEMA

Empyema has occurred 7 times.

Tuberculous	3 cases.
Mixed	3 ..
<i>Staphylococcus albus</i>	1 case.

The tuberculous empyemas were probably due to irritation of tubercles on the pleural surfaces.

one case a large caseating tubercle could be near the lung end of a wide adhesion, and I thought at the time it might cause trouble.

Of the 3 patients with this complication, one is alive and well; another alive and free from tubercle but with a sinus; the third (the patient with the large visible tubercle), after developing an acute empyema with high temperature, which was left severely alone and not touched except for the initial exploratory puncture, regained her health in a marvellous way was free from all symptoms and remained well till after the birth of a child 4½ years afterwards, when she declined and died.

The three mixed empyemas were due to spontaneous pneumothorax occurring respectively, four weeks, three days, and three months after the operation. All were hopeless bilateral cases from the start, and adhesion cutting was resorted to as a forlorn hope. In one case post-mortem examination revealed two perforations in the lower lobe, far from the site of the operation. Of these three patients, two are dead and one is dying.

The staphylococcus empyema came on fourteen

LEGENDS TO COLOURED ILLUSTRATIONS ON PLATE

FIG. II. shows an apical adhesion not far from the sub-clavian artery. It is a fairly wide band, fleshy and obviously containing lung tissue undesirably close to the chest wall. This being the case, the left-hand edge of the adhesion was nicked in order, it was hoped, to allow the adhesion to stretch.

FIG. III. shows the appearance at the second operation, when the adhesion was divided or enucleated on the chest wall. (Fig. IV.)

FIG. V. shows the scar perfectly white and bloodless.

FIGS. VI.—VIII. show what remained to be done after the second operation on Mrs. D. VI. and VII. illustrate two bands. The lower was membranous, attached to the mediastinum, with no free border mesially. It was left untouched. The upper, more fully illustrated in VII., was divided without difficulty near its insertion. VIII. shows what was left of a very large thick vascular adhesion. It had been half severed at the previous operation and the electrode had been pushed into the substance of the adhesion at its attachment to the parietal pleura at different points, and coagulated with diathermy, with the result that the adhesion could be severed with surprisingly little difficulty and no bleeding. The blood seen on the adhesion trickled down from one of the pricks of the local anæsthetic needle in

the parietal pleura, just outside the insertion of the adhesion.

FIG. IX. shows the retracted lung end of the divided adhesion.

FIG. X.—A folded adhesion with an irregular insertion. Great care must be taken to ensure that it has a free edge posteriorly. The Maurer's hook should be put behind and if the adhesion is too large to permit of this, it should be partly cut near the parietal pleura, and then further investigated. As it is impossible to know whether it contains lung tissue or not it must be divided piecemeal and continually re-examined.

FIG. XI.—It is better to cut the small adhesion first, lest it should tear out after the large adhesion has been severed.

FIG. XII.—A wide band adhesion, easily severable and without danger until the right-hand edge is approached, when lung tissue obviously runs up close to the parietal pleura. At this point the adhesion must be enucleated from the chest wall.

FIG. XIII.—A band adhesion which might contain lung tissue for part of its length. It is obviously fibrous, non-vascular, and easily severable. The smaller adhesion with its cone-shaped lung extension beneath is a much more difficult and dangerous problem. This must be enucleated.

DR. CHANDLER :

RADIOGRAMS ILLUSTRATING RETRACTION OF LUNG AFTER SEVERANCE OF ADHESIONS



FIG. XIV.



FIG. XV.

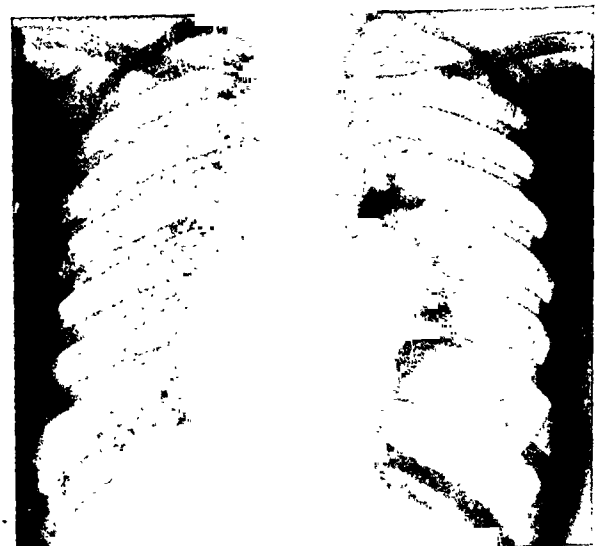


FIG. XVI.

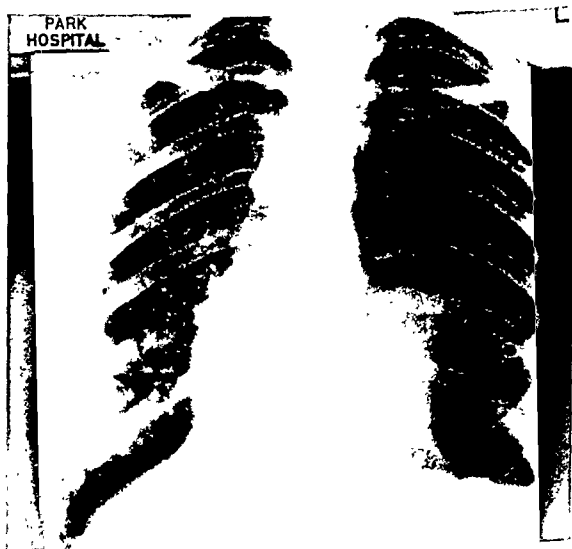


FIG. XVII.

days after operation, when symptoms suggestive of spontaneous pneumothorax occurred. The empyema was drained by a closed method, the lung re-expanded, a thoracoplasty was performed, and the patient is now well.

One patient developed a streptococcal empyema eighteen months after the operation, as a complication of influenza. This was in no way caused by the operation.

It may be asserted, therefore, that in this series an empyema due to the operation has been of rare occurrence. The possibility of the occurrence of an empyema at all, however, is very disturbing and constitutes one of the main dangers of the procedure. Though correct and careful technique will doubtless keep the proportion of empyemas low, it is probable that if large complicated adhesions are tackled, it will be impossible to prevent entirely tuberculous empyema and spontaneous pneumothorax.

It is for this reason that judgment must be used and adhesion cutting not be resorted to indiscriminately or as a routine. A patient may look and be well clinically, but the persistence of a cavity or tubercle bacilli, because of adhesions, makes the prognosis so grave that thoracoscopy would be indicated. If however there is an incomplete pneumothorax because of adhesions, but the clinical condition is good, bacilli absent, and no cavity visible, we should surely be conservative in recommending adhesion cutting, even though we may feel unhappy about the ultimate result after the re-expansion of the lung, for we know that there is the possibility of converting a patient, apparently fit, into a very ill and toxic one.

HEMORRHAGE

Bleeding, in more than negligible quantities, has occurred fifteen times. Twice there was arterial spurting. The bleeding has always been controlled. Once a slightly blood-stained effusion occurred, but there has been no hæmothorax throughout the series. In every case, without exception, the hæmorrhage has taken place from the parietal pleura or the parietal end of the stump. The greatest possible preventive care has been taken by always coagulating before cutting, using the electro-cautery alone only on non-vascular adhesions, and by, as it were, whittling

down the adhesion piecemeal, rather than resorting to bold and spectacular cuts. Bleeding has become progressively more rare throughout the series.

Illustrative Cases

The following four cases may serve to illustrate the possibilities of pneumolysis. All were desperately ill before the intervention.

1. Sylvia, aged 7, in 1930 had acute tuberculosis of the left lung, which rapidly became excavated until a very large cavity was formed in the left lower lobe. Sputum was copious and always contained tubercle bacilli in large numbers. An artificial pneumothorax was induced, but the cavity was unaffected owing to large lateral adhesions. These were divided by the single instrument, when a perfect "collapse" of the lung was obtained. The cavity closed and the child became well. As she dreaded and hated the pneumothorax refills an oleothorax was made. She has remained perfectly well, and to-day, more than five years later, is living the normal life of a schoolgirl.

2. Mrs. B., aged 44. Bilateral tuberculosis of the lungs, slight right, extensive left, with a very large cavity. Left pneumothorax induced September, 1929. Cavity held open by a number of adhesions to left upper lobe. These were severed with considerable difficulty in three separate operations. After the second operation there was considerable surgical emphysema. During the third operation

there was much bleeding which was controlled by diathermy; a temperature of 100° F. for three days and some fluid. The fluid increased and had to be aspirated several times. The patient to-day, nearly six years after, is in excellent health, tubercle bacilli have never reappeared. The pneumothorax is still being maintained; fluid is no longer present, but there is a great thickening of the pleura. First two operations single instrument employed, third operation two instruments.

3. Miss C., aged 25. Cough, sputum, hæmoptysis, temp. 100° F., sputum T.B. plus, a very large cavity in the right upper lobe. Artificial pneumothorax was induced in March, 1933, but wide and thick lateral adhesions prevented the closure of the cavity. These were severed by the single instrument in one operation: there was no reaction. The cavity gradually closed and the patient made a complete recovery. The pneumothorax was terminated by December, 1934. The patient is in good health to-day.

The fourth case is related in more detail to serve as a record of operative technique.

EXPLANATORY TRACINGS OF SKIAGRAMS

(see opposite page)

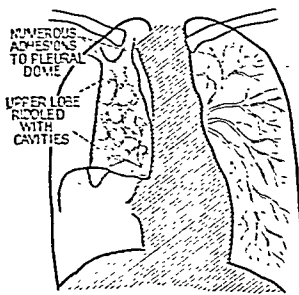


FIG. XIV.—Right upper lobe riddled with cavities held up by numerous adhesions to pleural dome.

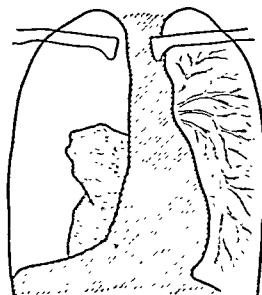


FIG. XV.—Complete freeing after adhesions severed by single instrument, with excellent result clinically.

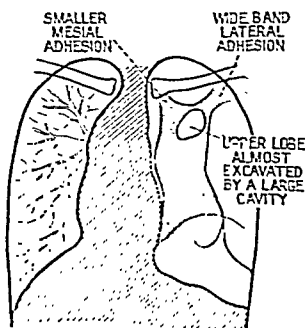


FIG. XVI.—Left upper lobe almost excavated by a large cavity held out by a wide band lateral adhesion and a smaller mesial adhesion.

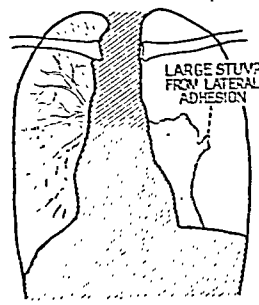


FIG. XVII.—Appearance after complete division of adhesions by the single instrument. The large stump of the lateral adhesion can be seen plainly. Good clinical result.

4. Mrs. D., aged 24. Tuberculosis, left upper lobe, high fever, flushed cheeks, night sweats and wasting, hæmoptysis, cough and sputum excessive, tubercle bacilli constantly present, almost the whole of the left upper lobe excavated. Artificial pneumothorax induced October, 1934. The upper lobe was held out by a number of adhesions of varying width and thickness. These were severed in three separate operations.

First operation (30.xi.34)

Single instrument, diathermy and electro-cautery. Point of entry second space, just outside the mid-clavicular line.

A band was seen at least three inches wide, the left-hand part from the operator's point of view, thin and membranous but very vascular, with thicker columns; the right-hand part and edge was thick and extended backwards to an unknown and unseeable distance. More mesially and anteriorly a cord appeared. No more could be seen with the direct-vision telescope. With the right-angled telescope another band adhesion, still more anteriorly, thin, translucent, and very vascular, came into view.

The outer half of the wide adhesion was anaesthetised, coagulated by diathermy, and cut by electro-cautery. This revealed an extensive posterior ramification of the adhesion, which was thick and fleshy. The cord adhesion was then cut by electro-cautery without anaesthesia. Much oozing occurred from the parietal stump. This was coagulated by diathermy. Then the left-hand edge of the broad adhesion was tackled, anaesthetised on the pleura, coagulated and cut with electro-cautery. Much oozing occurred, even from the preliminary pricks of the anaesthetising needle. This oozing was finally controlled with the small diathermy knob.

Time taken, nearly 1 hour.

Reaction.—Temp. 99° one evening, i.e., on the second day, otherwise none.

Second operation (28.xii.34)

Two instruments were used, diathermy and electro-cautery. Light, third space, just outside the anterior axillary line. Instrument, fourth space, between the mid-axillary and post-axillary line.

The large adhesion was easily found in this position and kept in view with the right-angled telescope. After cutting for some time, finding it impossible to see round the edge with the right-angled telescope, which kept getting obstructed by a more anteriorly inserted adhesion, a direct-vision telescope was put through the instrument cannula, when the adhesion could be beautifully seen, end on, and was found to be free and severable. The instrument was, therefore, inserted through the other cannula, and working left-handed the whole of the adhesion was severed. This revealed another adhesion further on, partly membranous, with several vascular columns. This was anaesthetised, the two edges were burnt through and part of the centre; the rest of the parietal insertion was coagulated and then left.

Time taken, about 1½ hours.

Reaction.—Temp. 100° next evening, 101° second day, 100.8° third day, 99° the fourth and fifth days, then normal. No other reaction.

Third operation (18.i.35)

The light was put in a lower space, and further out as previously decided, the instrument, posterior to the posterior-axillary line, in the sixth space. The cannula had to be pushed rather hard down on the skin, but it sufficed to deal with all the adhesions. Firstly, the middle fish-tail band insertion was cut. This was membranous and resisted the diathermy current. Then a cord was severed to the right-hand side of the thick band which was left from last time. Then this band was tackled and severed without great difficulty, it having been previously coagulated throughout. For some reason I could not get Maurer's hook behind it. I did not persevere much because it hurt the patient, but it appeared to be perfectly free. The whole adhesion was cut. Attention was then directed to the one that came forward and mesially towards the mediastinum. This looked like a thin translucent membrane, but on lifting up the edge it was found not to be free at all, but lung

tissue appeared to go right up to the mediastinum. No attempt, therefore, was made to cut this.

Reaction. Temp. 100.4°, 100.2°, 103.6°, 101.2°, 99.2°, 99.2°, 98.4° on successive days, then normal; slight fluid. No other reaction.

An excellent lateral collapse of the lung was obtained. The cavity and all symptoms and tubercle bacilli disappeared. The patient is in good health and has gained three stone in weight. Obliterative pleurisy is occurring and an oleothorax may be necessary to prevent the premature expansion of the upper lobe. The third stage of the operative procedure is illustrated in colour (Figs. VI.-IX.).

As it is difficult by verbal description for one worker to convey to another exactly what he is doing inside the chest and what types of adhesion he considers operable, unless they are working together, I submit certain coloured illustrations which were made by Mr. Shiells at the time of the operation. They will give some idea, though a limited one, of the structures encountered, but it should be realised that the picture the operator most desires will often be missed as it is usually impossible for him to know beforehand with what problems he is about to be confronted, and therefore difficult to know when to invite an artist.

The value of collapse therapy, so called, is indispensible. Too frequently it fails because of adhesions. If internal pneumolysis is or can be made safe, not only does it enlarge the scope of pneumothorax treatment, but it becomes the logical procedure whenever there are adhesions that can be divided. Pneumolysis will then be employed more often.

PERFORATION OF THE TUBERCULOUS INTESTINE IN PULMONARY TUBERCULOSIS

A REPORT OF TWO CASES

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ABDOMINAL complications in pulmonary tuberculosis are by no means rare, and are often present when the clinical picture points only to intrathoracic infection. Boyd¹ states that "every case of pulmonary tuberculosis which does poorly, but with no increase in the physical signs, should suggest intestinal involvement."

At autopsy, ulceration of the intestine, due to the tubercle bacillus, is frequently found, the figures varying from 30 per cent. to 80 per cent. Kaufmann² writes that "secondary intestinal tuberculosis is found in about 90 per cent. of cases of chronic pulmonary tuberculosis." On the other hand, very extensive destruction of lung tissue may be present in chronic pulmonary tuberculosis without intestinal ulceration. Nevertheless, perforation of the tuberculous ulcer is, by virtue of the thickened base of the overlying peritoneum, a pathological rarity. On this, Kaufmann says: "Perforation generally speaking is rare, and occurs only in acute annular ulcers which undergo quick caseation. The opening is circular, sharply cut, and usually small. The perforated loop is usually in the lowest part of the pelvis, if of the ileum, which is most frequently the case."

Muir⁴ and Boyd¹ agreed that perforation is relatively uncommon, and differentiate between

complete and incomplete perforations. Allen⁵ refers to "a rare example of perforation in the base of tuberculous ulcers in the jejunum," and remarks that perforation probably occurs only in cases of rapid course, with mixed infection.

Tuberculosis of the appendix is probably fairly common in intestinal tuberculosis (Muir) (Kaufmann), but perforation of the tuberculous appendix is rarely recorded. Kaufmann³ however states that "perforation (of the appendix) is not rare in tuberculosis."

The following cases illustrate unusual termination of advanced pulmonary tuberculosis: (1) complete perforation of tuberculous ulcer of the intestine; and (2) perforation of a tuberculous appendix.

REPORT OF CASES

I. COMPLETE PERFORATION OF A TUBERCULOUS ILEAL ULCER

A man aged 39, a hotel employee, was admitted to Gresswell Sanatorium on August 6th, 1934, suffering from pulmonary tuberculosis. He had suffered from weakness and cough (for two years), "nerves," which caused his abandoning work two months previously; and dyspnoea (for three weeks); he lacked energy and had frequent night sweats. The bowels were regular. He was told he had sugar in his urine. Sputum contained tubercle bacilli five weeks previously. He had lost 1½ st. in past six months.

Examination.—He was emaciated and obviously acutely ill, with dyspnoea on slight exertion. Heart: not enlarged; reduplication of second sound at apex, with systolic aortic murmur. Abdomen: liver edge palpable below right costal margin, otherwise nil abnormal. Central nervous system: normal. Lungs: extensive bilateral infiltration, with excavation of upper part of left lung, where many coarse râles were audible. On August 7th the blood sedimentation index (Cutler) was 28 mm. Urine: acid; specific grav., 1016; no sugar; trace of albumin; microscopically clear. Radiography (August 8th) showed "extensive broncho-pneumonic consolidation, involving practically all areas of both lungs, with cavitation in both apices. Small amount of relatively normal lung tissue at the base of the left lung. Gross distortion of the mediastinal shadow, together with marked 'tenting' of the left half of the diaphragm. Trachea deviated to the left side." On August 9th the sputum contained tubercle bacilli.

Progress.—August 13th: patient complained of diarrhoea, alternating with constipation. Partial response to symptomatic treatment and light diet. Sept. 9th: complaint of vague abdominal discomfort. Oct. 1st: gradually becoming worse, and now very ill; abdomen somewhat distended, but very little pain; motions, one or two daily (not blood-stained); distension partly relieved by enema. Oct. 2nd: abdominal distension not relieved by enema. Oct. 3rd: death.

Over the first two months the temperature ranged from 99° F. in the morning to 102° F. in the evening. On the evening of Oct. 1st, 1934, it rose to 103°, and then fell suddenly.

Autopsy.—Extreme emaciation; great abdominal distension. Right lung: weight 26 ounces; general pleural adhesions, both old and recent pleurisy; generalised broncho-pneumonia, most heavily affecting the middle third of lung, but scattered throughout; a few small cavities in the apices of both upper and lower lobes. Left lung: weight 30 ounces; general pleural adhesions; excavation of upper part of upper lobe, with remainder of the lung heavily sown with broncho-pneumonic patches, and showing multiple cavitation, particularly in the apex of the lower lobe, which was honeycombed. Heart: weight 9 ounces; small, "fibrous" changes in myocardium; valves competent.

Abdomen: peritoneal cavity distended with gas, of "heavy" odour but not offensive; peritoneum showed chronic inflammation, with free fluid, thinly purulent in type; much lymph present in flakes on bowel and other viscera.

Examination of the gastro-intestinal tract showed extensive ulceration of lower part of small intestine, many ulcers being almost completely circumferential, but no obstruction was observed. The base of one ulcer in the upper part of the ileum was perforated, the opening being about the size of a pin's head; the perforated loop was low in the pelvis. The terminal ileum, appendix, caecum, and large intestine were apparently normal.

Liver: 72 ounces; pale and fatty, with some "nutmeg" changes. Spleen: 7 ounces, slightly mushy. Kidneys: each weighed 6 ounces; some atrophic changes. Intracranial contents not examined.

II. PERFORATION OF THE TUBERCULOUS APPENDIX

A man aged 42, a farmer, was admitted to the sanatorium on June 29th, 1934, suffering from pulmonary tuberculosis. Past history was irrelevant. Symptoms of present illness seemed to date back twelve months; they were loss of strength and energy, troublesome cough with fairly copious sputum (never blood-stained), and dyspnoea even on slight exertion. No pain in chest was noted; night sweats were irregular. Micturition was normal. Bowels had acted freely and frequently for the last 9–12 months, with periods of normality. At present there were thin, watery motions four times a day, but no blood seen. Appetite capricious. Had lost 3 st. in the last year.

Examination.—Very emaciated; cyanosis and dyspnoea at rest; greatly increased by slight exertion involved in chest examination. Heart: not enlarged; sounds faint, but clear. Blood pressure, 120/90. Abdomen: liver dullness one finger-breadth below right costal margin; no free fluid detected; no tumour palpable; no tenderness elicited. Central nervous system: normal. Chest: large, barrel-shaped; very little respiratory movement of chest wall, particularly on right side; breath sounds much diminished over right lung, with generalised bronchial breathing, and patches of tubular breathing in the subapical regions; many moist sounds heard, mainly coarse crepitant râles. Fingers showed clubbing.

The diagnosis made was of advanced fibrocaseous tuberculosis, associated with emphysema.

The urine was acid; sp. g. 1028; no albumin or sugar; urates present.

Blood sedimentation index on July 2nd was 14 mm. Tubercle bacilli were found in sputum on July 3rd.

The radiographic report (July 4th) was as follows: "Right lung is partially collapsed by pneumothorax, with several fine strands of adhesions to chest wall and marked 'pocketing' of adherent pleura in the costophrenic angle. The lung itself shows widespread infiltration, with generalised fibrosis and emphysema in the uncollapsed portion. The left lung shows widespread infiltration with fibrosis throughout, with some emphysema at the base. Trachea and upper part of the mediastinum are deviated markedly to the left." Close examination of the patient did not yield any information which suggested the time of occurrence of the spontaneous pneumothorax. He had not had a sudden attack of dyspnoea, and had never experienced pain in the chest.

Progress.—On July 10th the patient complained of anorexia and "acid" type of indigestion, attended by diarrhoea. There was no abdominal pain or discomfort. Some relief was obtained from the administration of a mixture containing bismuth and opium. On the 17th his general condition was rapidly deteriorating. Diarrhoea was troublesome, but there was no abdominal pain. Abdomen now slightly distended, with general tenderness over the lower half, but not localised. Sudden cyanosis and death occurred on the same day.

The temperature throughout was fairly consistent—98° F. in the morning and 102° in the evening, with terminal collapse.

Autopsy Findings.—Wasted man; slightly dilated venules on face. Right lung: weight 28 ounces; pleural adhesions at apex; lung bound down on its diaphragmatic surface; diffuse fine tuberculous broncho-pneumonia in lung tissue, showing considerable fibrosis and emphysema, with much black pigment deposit throughout;

On the following morning (April 28th) the patient felt much better, but the pulse was again poor and 160 to the minute. She was therefore given 10 per cent. glucose in saline (to one pint of which 7 minims of 1/1000 adrenaline and 5 c.cm. coramine were added) by the continuous drip intravenous method, one pint being given in three hours.

The pulse-rate dropped and the patient's general condition improved distinctly. By the time four pints had been given her condition ceased to cause concern. The intra-uterine pack was removed on the afternoon of the 28th, when 1 c.c.m. pituitrin was given. Progress was satisfactory until the evening of the 29th, when the temperature rose to 99° F. On the morning of the 30th flatulent distension of the abdomen made its appearance, but was relieved by turpentine enemata. On palpation the uterus appeared to be normal, and intramuscular Ernuten was ordered thrice daily.

The lochia was rather offensive and the patient was gradually propped up to promote natural drainage. On May 1st the lochia were very offensive and the temperature reached 102° F. Kharsulphan was given intramuscularly and Dettol douches ordered thrice daily. Intra-uterine glycerin was started on May 1st and continued daily. On May 2nd, while the lochia remained offensive, the temperature started to drop, her appetite improved, and there was a gradual return to normal health.

I have reported this case in some detail, because from the history given by the patient's doctor and by her mother (who was attending as a qualified midwife and in the circumstances a very reliable witness) the case appears to be definitely one of spontaneous inversion. The mortality of acute inversion of the uterus is about as difficult to assess as its frequency, but in treatment there seems to be a tendency to overstress the benefits to be derived from "masterly inactivity." Given suitable measures to combat shock, the early reduction of the inversion seems to be indicated, while this can still be done comparatively easily and the uterine tissues have not yet been unduly damaged.

My thanks are due to Dr. F. Cauchi, who administered the anæsthetic, and to Dr. H. Fuld, who gave the blood transfusion. I have also to thank Mr. R. A. Grant for permission to publish these notes.

"IDIOPATHIC" STRIÆ ATROPHICÆ OF PUBERTY

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In ordinary cases striæ atrophicæ or striæ cutis distensæ can be explained as representing a method of cutaneous accommodation towards distension (physiological or pathological) when the skin is relatively insufficient—that is to say, unable to adjust itself by its normal elastic distensibility. In such cases a relatively too rapid growth or increase in bulk of the parts below the skin, or a cause of chronic distension of some kind—such as a relatively excessive growth of subcutaneous fat, muscle, or bone (especially connected with puberty), mammary gland, the pregnant uterus, ascites, tumours, or subcutaneous œdema—leads to a splitting or cleavage in the deeper parts of the cutis, manifested on the surface by the appearance of striæ atrophicæ, which are at first generally red or purplish, and in time gradually become white and smaller as they heal up.

But here I wish to refer only to those case of striæ not due to stretching of the skin; that is to say, the cases in which striæ have developed apparently in the absence of any special distension—in the absence of pregnancy, ascites, tumours, subcutaneous œdema, excessive subcutaneous fat, and other usual causes. In such cases the ordinary growth of the long bones, muscles, and subcutaneous fat seems to be associated with some insufficiency of the cutis (with perhaps deficiency of elasticity) which prevents the skin from adjusting itself to the parts beneath, excepting by the process of multiple cleavage—that is to say,

by the formation of "striæ atrophicæ." Striæ of this mysterious kind occur occasionally in apparently healthy, and in even athletic, individuals about the period of puberty, the skin failing to keep pace with the normally rapid growth of certain parts of the body, such as the shoulders, pelvis, and thighs. In 1932 I saw typical small striæ in the upper arms and upper parts of the thighs that developed without

obvious cause in a muscular male student at an English university. Striæ, in the absence of the ordinary causes, are however still better known to occur in connexion with enteric fever (notably the "striæ patellares") and certain other infections, although even in such cases the selective distribution of the striæ, and whether they are symmetrical or more or less unilateral or not, as I have elsewhere endeavoured to explain, must be

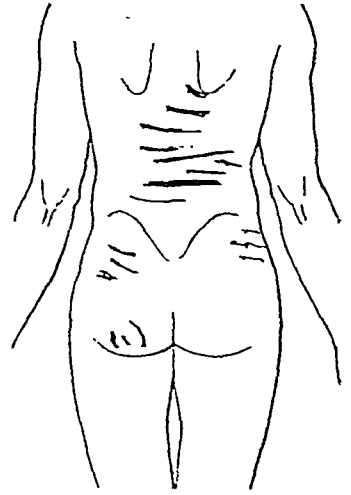


Diagram showing position of the striæ on the patient's back and buttocks.

due partly to mechanical causes, such as the position of the patient in bed, arrangement of pillows, &c.¹

Striæ form a prominent feature in the clinical syndrome attributed by Prof. Harvey Cushing to pituitary basophilia or basophilic adenoma of the pituitary gland, and in 1932 I suggested that the relative insufficiency of the cutis, which is a part-factor in the causation of the cutaneous striæ in so-called "idiopathic" and post-infection cases, may be due to a temporary basophilic hyperpituitarism associated with the period of rapid growth at and following puberty.²

I have recently seen a remarkable example of *idiopathic striæ atrophicæ of puberty* in a rather thin, tall girl, aged 13½ years. She seems bodily and mentally developed two years or so beyond her age, a good tennis player, but somewhat lanky and "overgrown," and inclined to slouch with bent back when sitting at her school work. Her height is 167 cm. and her weight is 51.5 kg. She commenced to menstruate at 12 years of age and her mammae and pubic hair are fairly developed. She has a series of bright red transverse striæ ("vergetures") over her back from the level of the tenth vertebra downwards (see Figure). There are several older (white) striæ over the outer upper parts of both thighs and there are a few smaller red striæ over the left gluteal region. It should be noted that her mother has had white striæ on the outer upper portions of both thighs since puberty, though she feels sure that none of these striæ were ever red.

In the case of the present girl the red transverse striæ over the back were first noticed by her mother

¹ On this whole subject cf. Weber, F. Parkes: Unilateral Striæ Atrophicæ, Practitioner, 1917, xcix., 453; also Weber: Cutaneous Striæ, Brit. Jour. Derm. and Syph., 1926, xxxviii., 1, and in discussions, Proc. Roy. Soc. Med., 1924, xvii. (Sect. Derm., p. 45), and 1927, xx. (Sect. Dis. Child., p. 11).

² Weber, F. Parkes: Urol. and Cutan. Rev., 1932, xxxvi., 731. This suggestion is not the same as that which I made in a short paper on the Causation of Striæ Atrophicæ Cutis (Vergetures), Brit. Med. Jour., 1928, i., 255.

about Christmas 1934, when they are said to have looked like very thin scratches; at that time the patient had a slight attack of whooping-cough. In other respects she has enjoyed good health. The causation of these "idiopathic striæ atrophicæ of puberty" is unknown, unless my above suggestion on the subject is correct. Anyhow, the patient in question developed a tendency to the formation of such striæ at puberty, as her mother did, and probably her habitual stooping over her schoolwork has determined the position of the striæ—namely, on her back at right angles to the convexity of the bend. It is possible that the infection with whooping-cough played a part in the causation of the striæ (analogous to the better-known part played by enteric fever in other cases) in association with the somewhat precocious onset of puberty. The bright red stripes across her back were very annoying to the patient during summer at the seaside in regard to bathing.

A CASE OF EUNUCHOIDISM

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A MAN, aged 35, was admitted to the Middlesex Hospital in March, 1935, complaining of increasing weakness and continued growth in height.

Family History.—Both parents were Irish, quick-tempered, and heavy drinkers. The father died at 64 from cancer of the jaw; the mother at 45 from an accident. One of the mother's brothers is said to be very tall. The patient is the youngest but one of eight siblings whose ages range from 33 to 52. They are all healthy and all except one are married and have two or more healthy children.

Personal History.—No details of early years are known. He attended school from 5 until 14 and was rather above the average in ability and usually at the top of the class. On leaving school he was a metalworker until the age of 21, and for eighteen months a ship's steward. He then went back to factory work until three years ago, since when he has been a butler. His standard of work has always been satisfactory.

Previous Medical History.—Operation at 13 for double inguinal hernia, which recurred and was operated on again at 15. Asthma, due to sensitivity to straw, developed at the age of 23 but ceased when he gave up working with straw. He has fractured several bones at various times, but there is no reason to suppose that his bones are unusually brittle. Sexual interest has been normal, but diminishing during the past few years, and there has never been any homosexual inclination. Masturbation is stated to have occurred since childhood until quite recently. At 23 he married and had normal though infrequent intercourse. An erection was obtained followed by orgasm but there was never any emission. His wife never became pregnant.

History of Present Complaint.—The patient is still steadily increasing in height, and the feet and hands are also growing so that he requires progressively larger shoes. There has never been any growth of hair on the face, axilla, or chest, and the pubic hair, which first appeared at 18, has always been scanty and of female distribution. The voice has always been high pitched and has never broken. He feels the cold badly and prefers hot weather. During the past two years he has complained of exhaustion after quite moderate exertion. He has lost two stone in weight in the past year.

Examination.—Weight, 10 st. 6 lb.; height, 6 ft. 2½ in.; span, 6 ft. 9½ in. Temperature 98.4° F. and pulse-rate 70, both remaining normal during the stay in hospital. As can be seen in the illustration the patient was tall and thin with the limbs slender and excessively long in proportion to the body. The hands and feet were large in proportion and there was no tufting of the phalanges

such as is seen in acromegaly. The skull was normal in size and appearance and there was no enlargement of the jaws. Only six teeth were present, the others having been removed. They were in good condition. The skin was pale, fine, and dry and gave a prematurely aged appearance due to the presence of many small wrinkles. No hair, other than lanugo hair, was present except for that on the scalp and a scanty pubic growth. The external genitalia were very small, and the testes, which were both present in the scrotum, were about the size of cherry stones. Scars were present on the abdominal wall from the previous operations. Clinical examination revealed no abnormality in the lungs, heart, abdomen, or central nervous system. Blood pressure 130/80. The ocular fundi were normal and the visual fields full. Mentally he was of good average intelligence. He was quiet and retiring and very sensitive about his condition. He had frequent mild fits of depression.

Special Investigation.—Blood count: red cells, 5,370,000; hæmoglobin, 100 per cent.; colour-index, 0.9; white cells, 10,000; polymorphonuclears, 62 per cent.; lymphocytes, 27 per cent.; monocytes, 10 per cent.; eosinophils, 1 per cent. Basal metabolic rate, minus 20 per cent. Fractional test-meal: high free and total acidity—0.27 and 0.23 per cent. respectively. Aschheim-Zondek test negative. Blood-urea 17, and non-protein nitrogen 21 mg. per 100 c.cm. Glucose-tolerance test within normal limits. Resting blood-sugar 93, highest 135 mg. per 100 c.cm. half an hour after taking 50 g. of glucose. Radiography: no thymus shadow; calcified glands at both lung roots; lower end of radius and ulna, upper end of humerus, upper end of radius, acromion process, upper and lower ends of femur and upper and lower ends of tibia and fibula showed non-union of epiphyses; pituitary fossa small, but showing no other abnormality.



Photograph of the patient.

Tandler and Gross¹ apply the term eunuchoid to those human beings whose appearance is entirely that of castrates although their sex glands have never been removed, and they have divided them into two types, the tall and the obese. Zondek² states that obesity is one of the common characteristics and even in the tall type some degree of obesity is usually present (though it may be only relative) in the sites of predilection—the breasts, the mons pubis, and the hips. He regards excessive vertical growth as a feature distinguishing eunuchoidism from pituitary obesity, attributing it to delayed union of the epiphyses. Union usually occurs by about the thirtieth year. The limbs tend to be long and slender, the tubular bones long, and the skull small in circumference. The lower part of the body is longer than the upper part and the fingers may almost touch the knees. Genu valgum and pes planus are common.

In these patients the development of the generative system is deficient and the secondary sexual characters do not appear. Hair fails to grow on the face or body, the voice does not break, and the larynx remains small, soft, and cartilaginous. Sexual desire is usually absent though occasionally it is normal or even excessive (Bauer³). The skin is pale and thin and the muscles poorly developed and feeble. The heart and aorta are often small and the blood pressure low. The blood picture is usually

normal but may show a lymphocytosis and more or less mononucleosis (Guggenheimer ⁴). The basal metabolic rate may be diminished or normal. A persistent thymus is said to be found frequently and the thyroid may be enlarged. There is usually nothing to indicate any abnormality of the pituitary.

The aetiology is almost always obscure. Hypoplasia of the sex glands is always present and often the testes are undescended. As a rule it is impossible to assign a cause for this aplasia.

The case described is an example of the tall type and shows only slight relative obesity. The patient has most of the essential features of the condition; the presence of sexual desire with the ability to obtain an erection with orgasm is uncommon and interesting. That atrophy of the testis may follow injury to the spermatic artery, an accident which sometimes occurs during operation for inguinal hernia, is well known, and the history of operation for double inguinal hernia at the age of 13 and again two years later for a recurrence makes it necessary to consider

this as a possible cause. The rather late age at which the operation was performed, the extensive changes present in the patient, and the fact that the testes are small but not hard and fibrotic makes this explanation seem improbable. Treatment in this case has so far not been attempted. There is at present no potent male sex hormone available at reasonable cost, and the results of testicular grafting are of such a temporary nature that it was not considered worth while.

I wish to thank Dr. E. A. Cockayne for permission to publish this case, and the Courtauld institute of biochemistry and the Bland-Sutton institute of pathology for the biochemical and pathological investigations.

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MEDICAL SOCIETIES

HUNTERIAN SOCIETY

Dr. W. BRANDER was unfortunately prevented from delivering his presidential address to this society on the

Challenge of the Chronic Sick

which was read in his absence by Dr. ANDREW TOPPING on Oct. 14th. The last half century, said Dr. Brander, had witnessed a great realisation of responsibility on the part of the public for the acute sick, but no informed person could hold that the provision at present existing for the care and treatment of adult chronic sick is on a level with our scientific knowledge of what is required. It would be convenient to consider the facts under four headings.

FOUR FACTORS IN THE SITUATION

1. *Development of Public Services.*—Most of the inadequacies of the treatment of the chronic sick were, he said, traceable to the obsolete Poor Law. It was true that the Elizabethan principle was simply to relieve the needs of the sick without reservations or limitations, but in practice the facts were in direct opposition to this principle. Those responsible for the institutional care of the chronic sick had little use for the misfits, the unfit and derelicts among the population. About 100 years ago Sir James Shuttleworth, assistant commissioner at Somerset House, reported on the parish workhouse in Norfolk in these terms:—

"It was the receptacle of age, vice, disease and infirmity. The aged and infirm and the infants were promiscuously mingled with sturdy, able bodied paupers, idiots and the sick, in groups which presented to the eye merely a picture of common misery or depravity. In such houses the aged and infirm were tormented by their co-mates in want, the sick were left to waste the wretched remnant of their lives with little care or sympathy; the able bodied pauper lounged in listless apathy with the idiot over the fire. The sexes could scarcely be said to be separated at night in the miserable and ill arranged apartments."

It was not until about 1865 that sick wards of workhouses were officially discouraged, and separate infirmaries built for the chronic sick. They were however not to remain for long in what was, very often, excellent accommodation. Owing to the demands

for admission of acute medical and surgical cases, the accommodation for the chronic sick was gradually curtailed and they were displaced once again into the sick wards of the mixed workhouses. Twenty-five years ago the proportion of acute to chronic sick in many of the poor-law infirmaries was 20 per cent. ; in 1930 the position was completely reversed—the proportion had risen to 80 per cent. At the present time the majority of the adult chronic sick patients chargeable to local authorities are treated in non-appropriated mixed institutions. In other words, being inmates of poor-law establishments, they are “paupers.” Buildings and equipment are often distressingly insufficient and inadequate. The fundamental fallacy in administration has been the assumption that the needs of the chronic sick were all alike and could be met by the simplest form of care. A survey made by the L.C.C. in 1931 of their transferred institutions showed that the facilities for the care of over 3000 chronic sick were insufficient, inadequate, and misused.

2. *Attitude of the Medical and Nursing Professions.*—It was, said Dr. Brander, well known that the medical staffs of voluntary and municipal hospitals sometimes objected to having beds in their acute wards occupied by chronic patients. This objection was often shared by the nurses. The presence of the chronic patients bars the way for the admission of more interesting acute cases. This feeling was in part due to a sense of futility in the treatment of the chronic patient. The treatment needed is so often dependent on social and economic factors over which the doctor rarely has control. Again, whether due to some defect in our system of medical training or other cause, medical students are dominated by what might be called the cult of the "acute." While an acute disease rouses whole-hearted enthusiasm, a chronic disease is apt to be regarded as more or less dull and uninspiring. In poor-law institutions mainly occupied by the chronic sick the visiting medical officer's round was often very casual; he frequently regarded the wards as museums in which the only interest lay in seeing occasionally a few rare diseases in their later and incurable stages. Under such treatment the chronic patients lost faith in doctors and nurses, and with the loss of morale their physical state deteriorated.

3. *Economical and Social Factors.*—In acute disease, social and economic conditions played only a minor

part; medical considerations are the paramount ones. In chronic disease the picture was different; the social and economic elements were closely associated with the purely medical, and were in most cases of greater importance. Because of his chronicity, if for no other reason, the patient's family suffers. Disorganisation, unemployment, destitution, and shattered morale result in the picture of the adult chronic invalid. The patient becomes such a burden on the children that they welcome any means to be rid of him.

4. *Difficulties in Administration.*—Municipal hospitals had to contend with many obstacles that do not affect the voluntary hospitals. One of them was the obligation to admit any poor person whose condition demands medical or surgical treatment, and who is unable to secure it elsewhere. Another obstacle was their inability to limit the number of patients. They could not discharge a chronic patient who needed institutional care unless there was room for him in another municipal hospital or institution. When the patient was likely to require prolonged medical and nursing care these difficulties led to the vexing "system of transfer," in which unfortunately the transfer was often dictated less by the needs of the chronic patient than by the pressing demands of the acutely ill patient.

MEDICAL ASPECTS OF CHRONIC ILLNESSES

He would not consider, Dr. Brander said, chronic mental diseases or pulmonary tuberculosis, because in each of these fields public responsibility had been recognised, and excellent provision made. The great undifferentiated group, known as the "chronic sick," included all other types of chronic disease. For the most part they were diseases of slow development; there was little homogeneous among the sufferers. Their disability was due largely to cardiovascular disease, diseases of the nervous system, non-tuberculous diseases of the lungs, rheumatism in its various forms, chronic kidney disease, diabetes mellitus, and other metabolic diseases. For most of these affections there was no permanent cure, although in many instances the disease might be arrested and the patient gain years of useful life.

Chronic disease affected persons of all ages, from the beginning to the end of life. Among the chronic sick were babies injured at birth and crippled by congenital defects; children under 16 years of age, and young adults with orthopaedic troubles, heart disease (congenital or acquired), rheumatism, or diseases of the nervous system; the middle-aged group, between 40 and 60 years, who constituted a very large proportion of those demanding hospital care; lastly, the aged, 70 years old or more.

Adequate treatment had been retarded in the past, he said, by two misconceptions regarding the nature of their disease: (1) chronic diseases had practically been labelled incurable; (2) they have been too closely associated with that decline in well-being which is called senility.

In spite of its grave significance, the term incurable had often been employed too lightly in the case of many chronic sick. As medicine progressed the conception of incurability was changing, and physicians and surgeons to-day were not slow in recognising the folly of calling a disease incurable because they were unable to discover a cure. Little more than a decade ago diabetes, Addison's disease, acromegaly, syphilitic diseases of the central nervous system, among others, might have been dubbed incurable. How different was the outlook of such patients to-day.

True senile decay first became manifest, as a rule, after the age of 70; it often did not occur till much later. Senile symptoms, often seen in the sixth or seventh decade, should not be designated as old age, when some insidious or obscure disease might be the *causa causans*. Use of the term senile implied the assumption of inevitableness leading to these victims of diseases being placed out of sight in homes for the remainder of their days, rather than regarded as patients requiring medical treatment.

THE CHANGING OUTLOOK

During the past twenty years there had, said Dr. Brander, been evidence of changing sentiment towards chronic diseases. Many voluntary hospitals and clinics, as well as social organisations in different parts of the country, had been actively promoting treatment, research, and public education, especially for malignant diseases, diabetes, and rheumatism. But the great majority of chronically ill still received no organised attention. This was beginning to be appreciated by those responsible for medical education. The medical school of Columbia University recently issued a circular saying:—

"Patients suffering from chronic diseases form the bulk of the physician's private practice, and because of the complexity and long duration of their illnesses, they are among the most difficult whom he is called on to treat. Because of the belief that this aspect of the practice of medicine does not receive the consideration it deserves, special stress will be laid throughout the courses on the diagnosis and treatment of chronic diseases."

Thanks to the Local Government Act, 1929, there was a decided trend towards a general recognition of responsibility by public authorities for the enlightened care and treatment of the chronic sick. In spite of the two Royal Commissions of 1832 and 1909, recommending better classification of inmates of workhouses, the L.C.C. soon recognised that there had been no consistent policy amongst the late twenty-five boards of guardians. The L.C.C. decided at once to abolish the mixed workhouses, with their hotchpotch of unclassified able bodied, aged, infirm, and chronic sick. At the same time, they launched comprehensive schemes for the reconditioning of certain institutions for ultimate use as hospitals. Perhaps the L.C.C.'s greatest contribution to date was the establishment of special units or clinics in the general and special hospitals. For children there were units for congenital defects, orthopaedic troubles, heart disease, rheumatism, diseases of the central nervous system, and congenital syphilis; for patients of all ages units for cancer, urological diseases, encephalitis lethargica, surgical tuberculosis, and chronic arthritis.

Two other units demanded special mention. Realising what could be achieved in the management of diabetes by expert medical treatment, diet regulation, and the whole-hearted coöperation of the patient, special units were set up at certain East End hospitals in whose area there was a high incidence of diabetes. Expert guidance at mental observation wards and psychiatric clinics is found to be of great help in guarding against the lapsing into chronic invalidism of those who are curable in the earlier stages of their disease. Such experts are allocated to the special units attached to certain hospitals. Another important development was the payment of an annual grant by the L.C.C. to the district nursing association for services to the chronic sick at home.

SPECIAL HOSPITAL FACILITIES

Those who suffer from chronic disease have, Dr. Brander went on, the right to expect medical and nursing care such as only the well-equipped modern hospitals can provide. The medical profession and the more enlightened among the public are no longer satisfied with the old attitude. At present local authorities are divided as to whether (1) to reserve hospitals entirely for the acute sick and others for the chronic sick; (2) to have hospitals in which both are accommodated. The L.C.C. favour a combination of acute and chronic pavilions in the same curtilage; when the present reconstruction is complete London will have over 2000 chronic sick beds associated with seven first-class acute general hospitals. One argument in favour of the mixed hospital deserves emphasis. It is desirable that the nurse's training should include care of the chronic sick; their psychology is very different from that of the acutely sick. The nurse who attends such patients month by month has a sounder knowledge of many branches of her profession than her colleagues who have trained in general hospitals. Whatever policy be adopted, accommodation should have regard to the special needs of the chronic sick—e.g., wide doors and corridors to permit the free passage of wheeled chairs, capacious alcoves or closets for their storage. The whole equipment and medical

organisation should be as complete as that for the acute patient. Patients should be classified in accordance with the nature of their disease and their age. Special services such as occupation therapy, physiotherapy, and social services are essential. In short, the modern chronic hospital should be a centre for medical education and research, offering special opportunities for study of the aetiology, treatment, and prevention of chronic diseases.

Dr. Brander concluded with an appeal for the complete coördination between all agencies, public and voluntary, dealing with the chronic sick problem from the hospital, institutional, and domiciliary standpoint. When orderly ideas had been formulated, and systematic planning established, the public would face the necessity for a change of policy. They would come to realise that their responsibility was at least as great for the chronic as for the acute patient, and that poverty was irrelevant. They would find that the present haphazard methods were imposing a tremendous burden of expense on the community. They would take steps to prevent the enormous waste of money on patent medicines and on various healing cults. They would come to regard the prevention of chronic disease as a pressing public health problem, and money expended in solving it as an investment which would ultimately pay large dividends.

REVIEWS AND NOTICES OF BOOKS

Diagnosis and Treatment of Skin Diseases

By J. H. SWARTZ, M.D., Instructor in Dermatology, Harvard Medical School; and MARGARET G. REILLY, R.N., Graduate, Massachusetts General Hospital Training School for Nurses; Supervisor of Skin Diseases, Massachusetts General Hospital. New York: The Macmillan Co.; London: Macmillan and Co., Ltd. 1935. Pp. 316. 15s.

THE collaboration of doctor and nurse in the production of a text-book is something of a novelty, at least in dermatological literature. The outcome of their joint effort will certainly appeal to the practitioner who aspires to something more than a prescription for calamine lotion, or advice to apply ultra-violet rays. Both nursing and ambulatory treatment are described in minute detail, no less than 5½ pages of type being devoted to the treatment and prevention of epidermophytosis alone. There is a long chapter on syphilis. The technique of intravenous injections is illustrated by numerous line drawings and diagrams of the requisite apparatus for use by doctor and nurse. Precise instruction on the care of needles and syringes is supplied, and the public health and social aspects of the disease are well discussed. Some clinical photographs illustrate the text. A chapter on the care of the normal skin is a new departure in a text-book on dermatology; it includes sections on the various types of baths available for cosmetic purposes, on the care of the feet and hands, and on special methods for the use of those afflicted with dry or oily skins. The treatment of hypertrichosis, freckles and wrinkles, and the sclerorrhoic scalp are included in this section, and the authors have even invaded the province of the hairdresser in discussing "permanent" and other methods of waving the hair. It is useful to learn, for instance, that a greasy scalp will probably benefit by "permanent waving," while the disadvantages associated with the dry type of scalp will be aggravated by this desiccating procedure. Here, too, will be found

useful so-called "tonic" prescriptions for use with dark and with light hair, designed to prevent the risk of undesirable modifications of a carefully selected and expensive tint. The section on the care of a baby's skin from the moment of birth will provide information not to be spurned even by the most experienced. There is a most welcome chapter on the exanthemata, while dermatology proper, which occupies the main bulk of the book, receives ample consideration on the regional basis. There are 21 charts or tables pertaining to the differential diagnosis of the commoner dermatoses, with clinical photographs to illustrate their main localisation and characteristic features.

We welcome this original contribution to the teaching manuals.

The Body and its Health

By WINIFRED CULLIS, C.B.E., M.A., D.Sc., LL.D., Sophia Jex-Blake Professor of Physiology, University of London, London (Royal Free Hospital) School of Medicine for Women; and MURIEL BOND, M.Sc., Assistant Lecturer in Physiology at the same school. London: Ivor Nicholson and Watson Ltd. 1935. Pp. 216. 3s. 6d.

Prof. Cullis and Miss Bond believe that the human body is badly treated because its possessors do not bother to find out how to make the best use of all its powers. It is their view that some knowledge of the body and of the laws of hygiene would result in a healthier and happier community, and they have written this book for the purpose of popularising this knowledge among young people. The publisher's jacket states that the book is intended to appeal to boys and girls of school age, but it will probably be found more useful in the hands of the teacher of hygiene than in those of the members of the class. There may be no satisfactory way of avoiding the use of many scientific terms in presenting a subject of this kind, but in some places such terms are

perhaps taken too much for granted and their explanation is deferred rather too long. The illustrations are lavish and clear, but school-children may be mystified by such a legend as that on p. 50: "Diagram showing localisation of function in the cortex of the cerebral hemisphere."

The student is taken through a comprehensive course, beginning with the living body as a whole, and going carefully into the various systems and their functions. The skeleton, muscles, nerves, special senses, circulation, respiration, digestion, kidneys and skin, and the ductless glands are dealt with in turn, and various matters of everyday life, including food in the home, clothing, care of the bowels, and ventilation, are discussed in separate chapters. For practical usefulness special praise may be given to the sections on respiration and ventilation, and to the short chapter on the special senses as a whole. Much helpful advice is given on diet, with a series of tables showing the sources of the various elements required to ensure satisfactory nutrition. The book is well printed and indexed, and is remarkably cheap.

Materia Medica, Pharmacy, Pharmacology and Therapeutics

Twenty-second edition. By WILLIAM HALE-WHITE, K.B.E., M.D. Lond., M.D. Dub., LL.D. Edin., Consulting Physician to Guy's Hospital. Revised by A. H. DOUTHWAITE, M.D., F.R.C.P., Physician to Guy's Hospital; Physician to All Saints' Hospital. London: J. and A. Churchill Ltd. 1935. Pp. 552. 10s. 6d.

If any text-book can be said to have stood the test of time, it is Hale-White's *Materia Medica*. First published in 1892, it has gone through edition after edition, and now, only three years after its predecessor, appears the twenty-second edition. The general plan of the work has not been altered, but Dr. Douthwaite has found it necessary to make considerable alterations and additions to the text. The chapter on the actions and uses of digitalis has been rewritten, additions have been made to the articles on sera, vaccines, vitamins, and nitrites, and the author has tried to simplify the study of the barbiturates by introducing Mutch's table. Non-official and trade preparations have not been neglected, and the section on pharmacy has been revised. The whole production gives a full account of modern pharmacology and therapeutics, and is well up to the standard of previous editions.

Groedel's Röntgendiagnostik in der Inneren Medizin

Fifth edition. By HEINZ LOSSEN. X Ray Director of the Hospital zum Heiligen Geist, Frankfurt a.M. Munich: Lehmann. 1935. Pp. 187-398. With 104 illustrations and 54 plates. M.24.

The second part of this well-known atlas and text-book has been almost completely rewritten and largely reillustrated for this fifth edition. The companion volume dealt chiefly with physics, technique, and organisation; this one in some seven chapters covers the skull, teeth, sinuses, chest, and diaphragm. The standard attained is high, particularly in the chest sections, and each chapter is written by one who can speak with authority. The illustrations are either photographic prints of radiograms or clear diagrams. It is regrettable that here as in many other text-books it is the extreme or the

unusual that is pictured rather than the borderland case, often met with in daily practice, which leads the radiologist to seek help from a text-book. This is particularly true as regards the exceptionally fine reproductions in the dental section. The radiographic technique of each division is simply and adequately described and the discussion of each subject is sufficient. There is no index, nor even a list of chapter headings; presumably these will be published in a later volume of the series.

Elementary Textbook of Anatomy

By HENRY E. CLARK, C.M.G. New edition, revised by JOHN GRAHAM, B.Sc., M.B., Ch.B., F.R.F.P.S., Professor of Anatomy in the Anderson College, Glasgow. London and Glasgow: Blackie and Son Ltd. 1935. Pp. 278. 6s.

THIS little book, for junior students and nurses, appears to be reliable within the necessarily narrow limits in which it is set. It seems to have been revised with care, and the facts it presents are simply and clearly set out. The terminology used is rather out of date in some places, but that is a minor matter, and we expect that the book will fulfil its purpose very well.

St. Bartholomew's Hospital Reports

London: John Murray. 1935. LXVIII. Pp. 351. 21s. (subscribers 15s.).

THIS volume is remarkable for the number and variety of the subjects discussed in its pages, and it serves to show how knowledge may be gained from the study of carefully prepared clinical records. This is true particularly of the papers on pink disease by Dr. C. F. Harris, on fractures of the carpal scaphoid by Mr. J. P. Hosford, on carcinoma of the stomach by Mr. R. W. Raven, and on Raynaud's disease by Prof. Paterson Ross, all of which draw attention to the practical problems of prognosis and treatment. The results of two new methods of treatment are recorded—the X ray treatment of carcinoma of the oesophagus recently modified by Dr. W. M. Levitt, and Dr. R. G. Macfarlane's work on the treatment of hæmophilia by snake venom, which is noticed on another page. In the collection of five articles which constitute a symposium on infections of the urinary tract special attention must be directed to those by Mr. W. Girling Ball and Dr. L. P. Garrod. Mr. Ball has been able to show in a striking series of cases how frequently unilateral infection is associated with some predisposing obstructive lesion in the renal pelvis or ureter; and Dr. Garrod has described a method of estimating the efficiency of urinary antiseptics designed to make it possible to determine which of the substances commonly recommended can in fact sterilise the urine, and the conditions under which they may achieve this object. A paper by Mr. R. C. Elmslie on fibrosis of bone, which is a continuation of his earlier publications on other subjects, and Dr. G. D. Kersley's essay on growth and metabolism, light on some of the more

In addition to a statistical report from the cancer department of the hospital, and some shorter contributions on pathological subjects by Mr. C. K. Vartan (the nature of leucorrhœa), Dr. R. G. Anderson (the plasma phosphatase in jaundice), and Mr. F. d'Abreu (adamantinoma of the jaw), there is an appreciation of the late Mr. F. A. Rose who helped to establish and organise the throat department, and an interesting analysis of the careers of some hundreds of former students prepared by Mr. Ball as dean of the medical college. He has been able to show that the reason why so large a proportion of university students never take a degree is not because they fail to pass the final university examination but because they never enter for it.

THE LANCET

LONDON: SATURDAY, OCTOBER 19, 1935

ARTIFICIAL PNEUMOTHORAX AND AFTER

It has been remarked that the treatment of pulmonary tuberculosis is the treatment of cavities. There are, it is true, certain types of fibrous-walled cavities which occur chiefly in the fibroid phthisis of later life which may persist for a decade or longer without causing any serious symptoms or giving rise to progressive disease. But apart from these examples of exceptional resistance there are few exceptions to the rule that a cavity which fails to close on rest, or which cannot be closed by artificial means, will lead to the death of the patient within a limited period. Nor is this surprising. A cavity is a natural incubator where the tubercle bacillus can breed under ideal conditions and avoid the perils of overcrowding by migration along open routes to fertile territories adjacent or across the carina. It is more surprising that the closure of a tuberculous cavity by the simple apposition of its walls is usually followed by healing and that after a cavity has been closed, for a period of a few months in some cases and a few years in others, re-expansion of the lung does not give rise to any breaking down of tissue recently friable. So long as a cavity remains patent the consumptive's life is in danger. The temperature may be normal, the pulse show no quickening, symptoms may be in abeyance, and the general condition excellent; but if the skiagram still shows evidence of excavation there is no basis for optimism. If tubercle bacilli persist in the sputum, even though X rays reveal no sign of excavation, ulceration must still be assumed and excavation though possibly of minimal extent must be inferred. An appreciation of these facts has led to the early employment of collapse therapy in the treatment of pulmonary cavitation, for the soft-walled cavities of incipient disease as a rule yield readily to artificial pneumothorax.

If pulmonary tuberculosis were always discovered in the stage of early infiltration the difficulties of its treatment would be few, though when the disease is subpleural and the lung membranes are involved simultaneously with the lung parenchymatous adhesions between visceral and parietal pleura may be present almost from the start. But early diagnosis is seldom possible. Incipient disease may give rise to no symptoms, the practitioner may fail to realise the significance of symptoms, or the patient actuated by fear may refuse to report sick. When disease has persisted for more than a few months complete collapse can seldom be secured by means of a pneumothorax. In some cases symphysis of the pleura prevents the entry of air into a pleural space no longer potential. In others a collapse incomplete but

sufficiently effective to close cavities may be attained. In the remainder a measure of collapse is secured, but adhesions, which form most readily over excavated areas, anchor cavity-containing areas to the chest wall. Success may, however, still be attained, for adhesions may stretch under the influence of a carefully controlled pneumothorax. If the diseased and excavated lung is held taut by adherence at apex and base phrenic avulsion may relax tension and, with negligible risk or inconvenience to the patient, lead to a rapid closure of cavities though possibly at the expense of the partial sacrifice of some areas of healthy lung. If these methods fail the pneumothorax is sometimes maintained either from fear of depressing the patient by its discontinuance or because an easy optimism induces a vague hope that things will improve. Such an attitude is at once timid and ineffective. An artificial pneumothorax which is doing no good is probably doing harm. It should either be made effective or abandoned. There is no middle way. If it is abandoned the patient must either be left to die, or be urged to submit to a thoracoplasty—a crude and mutilating proceeding which often fails to achieve its object. In most cases the best means of overcoming the difficulty of the ineffective collapse is to render it effective by internal pneumolysis, a method which enables the patient to avoid the perils and pains of two or three major operations (or, to adopt current euphemism, a major operation performed in two or three stages), and which enables the physician to secure collapse exactly where the collapse is needed and thus to avoid the hazards of phrenic avulsion, the result of which though sometimes excellent can seldom be accurately predicted.

When performing an internal pneumolysis the operator's vision is limited by the very small field determined by his endoscope. He is working in a confined space, the mobility of his instruments is hampered by the costal arches, the adhesions to be severed are often in close proximity to vital structures, and bleeding can only be controlled indirectly by diathermic coagulation. The risks attending work of such a kind might well seem to outweigh the possible benefits of successful adhesion section. But those who are prepared to master the technique need not be deterred from the practice of internal pneumolysis by imagined dangers. Dr. F. G. CHANDLER, who has taken a leading part in demonstrating the method of Jacobaeus in this country, has proved—as MAUREL, GRAVESEN, and others have proved elsewhere—that if a rigid technique be followed, if infinite patience be observed, and meticulous care taken, the risks of internal pneumolysis are small. No one who reads the story of individual cases or who studies the statistics supplied will dispute the author's opinion that the results of internal pneumolysis are highly gratifying. Those who have had the opportunity of either performing endoscopy or attending endoscopic operations at home or abroad will note with interest that Dr. CHANDLER is still inclined to favour a single puncture where this is feasible. In his hands

this method has yielded excellent results in the section even of very thick adhesions. The more usual practice involving two punctures will probably continue to be the method of choice for most workers.¹ The technique adopted is of minor importance. It is, however, of paramount importance that whatever method be used the same care should be exercised to avoid the dangers inherent in any closed method of operating within the thoracic cavity. A recent warning by Mr. TUDOR EDWARDS² is opportune, and the beginner should realise that any damage to the lung will lead to "complications much more serious than the condition for which the operation is undertaken." Until practice has brought experience and confidence he must be prepared to restrict his work to the simpler types of adhesion. But those who by study and discipline have qualified themselves for work of this kind will not regret either the time or the labour spent in acquiring the skill necessary for the successful treatment of disease once inevitably fatal and now frequently curable. There are cases where, as Dr. MAURER³ insists, the section of adhesions may mean for the patient the difference between life and death. Operative endoscopy may not greatly affect public health statistics, but it is of vital importance to individual sufferers.

BOVINE VACCINATION AGAINST TUBERCULOSIS

At the conclusion of the test of Spahlinger bovine vaccine in Northern Ireland, related in these columns a fortnight ago (p. 780), an official of the Ministry of Agriculture in Belfast suggested that the satisfactory nature of the results obtained raised the question of making compulsory use of the vaccine as a means of eradicating tuberculosis from the herds of Northern Ireland. This prospect has indeed been raised, but before it can be realised there are a number of doubts and difficulties about the use of any bovine vaccine which will have to be cleared up. A comparison of the results obtained in this and other investigations shows that the problem of immunisation has been approached in several different ways. Thus, since McFADYEAN's first attempts to induce immunity with old tuberculin, many other substances have been used—e.g., the split products of bacillary substance, bacilli killed by various agents, and living bacilli whether of human, avian, ichthiic, or modified bovine strains. The methods of vaccination have also varied within wide limits. Some investigators have been satisfied with one large vaccinating dose, others have tried a yearly revaccination in the hope of prolonging the period of immunity, whilst almost every possible route has been used for the introduction of the vaccine. The resistance test dose of tubercle bacilli given later to demonstrate the immunity produced has varied equally widely. Some experimenters have used emulsions of tuberculous tissues in

which the number of bacilli cannot have been known with any degree of certainty; others have used cultures of bacilli of known virulence and of carefully estimated dosage; others again have relied on exposure to natural infection on the farm. Even that is not the end of the almost infinite variety in the conditions of trial, for animals have been maintained during the experiments in rigid isolation, or under ordinary farm conditions, or on a free range in the open air. Lastly, not a few of the investigations have been made with numbers of animals too small to be of statistical significance. The reason for this is apparent: the cost of field experiments is of a very different order from that of laboratory experiments with guinea-pigs and rabbits. Among the recent investigations made with significant numbers may be cited the careful researches of WATSON (72 animals) carried out under the aegis of the Canadian Government, in which the immunity conferred varied between two months and four and a half years; and those of BUXTON and GRIFFITH (51 animals) with grants from the Cambridge Institute of Animal Pathology and the Medical Research Council, in which immunity extended from eight months to three years—the latter series being entirely immunised with BCG vaccine, the former with BCG plus a virulent strain. An extensive field experiment was also recorded two years ago by DREYER, VOLLUM, and AMMITZBÖLL, with diaplyte vaccine, in which 281 animals on a heavily infected farm were vaccinated without interference with farm conditions during a period of nine years. In this case 90 per cent. of the cattle on the farm were tuberculous at the beginning of the experiment, and although the immunised animals were allowed to mix freely with the infected stock only 2 of the 281 animals developed clinical tuberculosis.

New factors have been introduced in the Northern Ireland experiment. Various types of vaccine and bacterial product were used, the most important being the "new simplified dead vaccine" of Mr. SPAHLINGER in which the organisms were not killed by any of the ordinary laboratory methods but by exposure in a cool dark place until all the bacilli in the emulsion had died a natural death by the efflux of time—a year or even longer. A high resistance test dose of bacilli was selected—viz., 2.5 mg. of growth administered intravenously. Seven different strains of bovine bacilli were used in the preparation of this test dose, of which three were obtained from milk by direct cultivation, and apparently without previous guinea-pig control to ensure their virulence. The other four strains had been isolated by guinea-pig inoculation. Preliminary tests were made of the combined virulence of the assembled seven strains, but no previous information was available regarding individual virulence prior to the test. The calves used for the experiment had been reared out of doors and were allowed to continue in the open to the end of the experiment. Whilst this experiment impresses by the long period of immunity obtained and its high degree, the number of animals were small—very small indeed to base a plea

¹ Vide Scott Pinchin, A. J., and Morlock, H. V.: *THE LANCET*, 1931, i., 1300.

² *Ibid.*, Oct. 12th, 1935, p. 853.

³ *Irish Jour. Med. Sci.*, September, 1935, p. 537.

for compulsory vaccination upon. It must be regretted by all friendly observers that the calves used for the minor experiments with old vaccine and bacterial products were not all devoted to the major issue of testing the new simplified dead vaccine prepared in 1929, for which purpose only 11 calves out of 32 available (including controls) were used. We have no doubt that before resort to any compulsory scheme of bovine vaccination based on this most suggestive experiment it is essential that standard conditions should be laid down for estimating the value of a bovine vaccine. No doubt the inherent difficulties of the task have been largely responsible for the variation in technique, and a field experiment on an adequate scale is beyond the means of any voluntary research institution. The preparation and standardisation of vaccines on a large scale needs careful control, especially when dealing with those made from modified living organisms, such as BCG, or from bacteria which have been allowed to die by the efflux of time, such as the Spahlinger vaccine—to mention two which have become important of recent years. Indeed, as far as we are aware, no one has yet prepared the Spahlinger vaccine except the originator himself. To these questions must be added the cognate problems of suitable environmental conditions of the animals under test, the duration of the immunity attainable and the most satisfactory way of measuring it. Above all, a team of workers is needed who will adequately represent the different branches of bacteriology, immunology, and veterinary science. The experiment in North Ireland justifies a survey of this kind.

HÆMOSTASIS IN HÆMOPHILIA

"The sight . . . of a patient slowly becoming exsanguine from a trivial injury, capable, perhaps, of being securely enveloped in bandages, must leave a lasting impression on the observer."

THE studied moderation of this sentence from BULLOCK and FILDES's monograph on "Hæmophilia" hardly conveys the sensation of therapeutic bankruptcy which assails the clinician faced with a case of hæmophilic hæmorrhage. This very helplessness has, in the past, encouraged the use of such heroic measures as hot irons, tar, and strong acids, which were not only valueless but prejudicial, in themselves, to the patient's existence. About a year ago Dr. R. G. MACFARLANE and Dr. BURGESS BARNETT published in *THE LANCET*¹ their discovery of a new hæmostatic of much promise in the treatment of external hæmophilic hæmorrhage. This agent, it will be remembered, was a solution of the venom of Russell's viper,² an Indian snake. MACFARLANE has now reviewed the control of accessible hæmorrhage in hæmophilias with special reference to the use of this venom.³

The hæmorrhagic tendency in hæmophilia seems to be due solely to a disturbance in the coagulative mechanism of the blood. The fundamental fault upon which the prolonged coagulation time depends is not yet clear, but the hypothesis which is perhaps most favoured at the present time is that all the phases of coagulation are slowed owing to an abnormal stability of the plasma colloids. Our ignorance of the pathogeny of hæmophilia makes it impossible to attempt to correct the underlying abnormality in a rational manner. The only measure which will diminish coagulation time over a considerable period is transfusion of blood. In the absence of effective general measures, the local treatment of hæmorrhage assumes great importance, and, unsatisfactory though it may be, the only method of dealing with a hæmophilic patient at the present time is the scrupulous avoidance of traumata and the efficient and prompt treatment of hæmorrhages, when they are accessible, by local means and by blood transfusion. It is particularly this last aspect which is discussed by MACFARLANE in his latest paper. Internal hæmorrhage still remains almost certainly fatal. From the nine cases which he reviews he is able to draw certain conclusions and to suggest a tentative system of treatment. The first two were treated before Russell's viper venom was available, but in the remaining seven it was employed successfully as a hæmostatic, supplemented in two cases by blood transfusion. The venom has the power, *in vitro*, of causing hæmophilic blood to form a tough elastic clot. One experiment may be quoted to show its extraordinary potency: a specimen of hæmophilic blood which took 35 minutes to clot spontaneously, clotted in 17 seconds on the addition of one-tenth its volume of 1 : 10,000 Russell's viper venom solution. Fortunately the coagulant power of the venom does not diminish in direct proportion to the dilution and a coagulant effect could still be demonstrated after a dilution of 1 : 10¹⁸; thus in high dilution an extremely potent coagulant action is retained while other possible toxic effects of venom are absent. The sterility of solutions was ensured by passage through a Berkefeld filter. This interesting series of cases represent the first clinical trials of a remarkable coagulant. From their consideration MACFARLANE is led to condemn certain therapeutic measures in common use. Pressure upon injured tissues should, he holds, never be maintained for more than a short time. Its value consists merely in decreasing the blood flow a sufficient time for the hæmostatic to produce a firm clot. Pressure applied for longer is almost certain to lead to necrosis of already devitalised tissue. This is well demonstrated in his Case 9, where a tightly fitting dental plate led to necrosis and subsequent infection of a tooth socket; the condition did not start to improve until all local applications were discontinued. Experience with other hæmostatics has shown that Russell's viper venom is the most effective one available, and that if it fails others are not likely to succeed. Meddling with the wound is strongly deprecated and irritants should never

¹ THE LANCET, 1934, II., 985.

² We understand that Russell's viper venom is not yet on the market, but can be obtained for use in dental or surgical clinics, or by a doctor or dentist actually requiring it for the treatment of bleeding in a hæmophilic, on application to the director of the Wellcome Physiological Research Laboratories, Beckenham, Kent.

³ St. Bartholomew's Hospital Reports, 1935, LVIII., 229.

be used. Adrenaline may have a temporary value in decreasing the local blood-supply, but if applied repeatedly has the same dangers as prolonged pressure. The cautery "is worse than useless in cases of hæmophilia and should never be employed." Sutures should not be used unless it is certain that they will not cut out; suturing the skin edges over wounds in which the bleeding is not completely controlled is regarded as certain to lead to extensive hæmatoma formation. An illustration of this danger is provided by Case 8 in this series, where a cut on the dorsum of the right hand was sutured on two occasions; the day following the second suture the hand was so swollen with effused blood as to be "almost spherical." Hæmorrhage was eventually controlled by removal of all sutures, the wound being lightly packed with gauze soaked in Russell's viper venom.

The advice given for the treatment of accessible hæmorrhage in cases of hæmophilia is as follows:—

"The wound should be very carefully and gently cleaned out, and useless clots removed. A dressing soaked in Russell's viper venom should be applied, or lightly plugged into the cavity. Some means should be adopted to keep the dressing firmly in place without movement. In the mouth a well-fitting plate should be employed, a loose plate is

useless as its movements dislodge the clots that form. This form of treatment can usually be relied upon to arrest or at any rate greatly diminish the bleeding. If it still continues the application may be repeated, using a hot dressing at 50° C. If this fails, the best that can be done in the way of light packing with gauze soaked in adrenaline and snake venom should be carried out. Further hæmorrhage should be disregarded and no drastic steps taken to arrest it. The wound should be left alone and the patient allowed to bleed. He should be watched carefully and at the first indication a full transfusion of normal blood given, repeated, if necessary, until the bleeding stops. This will occur when healing takes place, and repeated interference with the wound will only delay matters. It cannot be too strongly emphasised that any other measures than those suggested are almost certain to be useless and to delay healing. The hæmophilic patient usually loses his blood slowly, and even when bleeding is untreated, it will probably be found that a transfusion is only necessary every other day. Naturally, the patient will be alarmed at the continued hæmorrhage, and his reassurance by the explanation of the position is a very necessary part of the treatment."

The case reports in Dr. MACFARLANE'S paper bear testimony to the success which accompanies this simple and rational therapeutic scheme, and there seems to be no doubt that in Russell's viper venom we have the most, if not the only, effective local agent for the arrest of hæmorrhage in hæmophilic patients.

ANNOTATIONS

A DANGEROUS DRUG

THE increasing importance and danger of agranulocytosis is shown by the fact that it is held responsible for 1500 deaths in the United States alone in the three-year period ended in 1934.¹ Since the disease was first described many efforts have been made to determine its cause. There is at present no satisfactory evidence to support a dietary deficiency as an ætiological factor though this possibility has been investigated. Since the neutropenia in many cases has been shown to precede the onset of septic conditions, it is presumably the cause and not the result of bacterial invasion of the tissues. The frequent occurrence of attacks at the menstrual period has suggested a possible but entirely hypothetical hormonal dysfunction. The evidence incriminating a certain group of drugs is, however, extremely strong. That such drugs may not be involved in all cases is clear from the work of Jackson,² but as Kracke and Parker point out,¹ they have certainly played an essential part in some. These workers conclude that of the drugs incriminated by various observers amidopyrin (Pyramidon), dinitrophenol, and possibly other closely related preparations must certainly be considered ætiological agents. They have collected 172 cases from all over the world in which the illness has definitely followed the use of these substances. In some instances successive attacks have followed further administration of the same drug, and a somewhat similar picture has been induced in animals by similar means. The disease is certainly most prevalent in that class of people—notably doctors, nurses, and their families—who are the largest users of these drugs, and its first appearance

seems to be closely related to the time at which the amidopyrin-containing preparations came into use. Amidopyrin is a constituent not only of drugs usually ordered by the physician, but also of medicines or tonics advertised to the man in the street. In this country it is probably prescribed most often in the form of Allonal, which is increasingly used both as hypnotic and analgesic. It also forms part of the preparations Amytal compound, Cibalgin, Compral, Dismenol, and Prokliman. By those who admit the possibility of danger the argument is put forward that the amounts taken in these compounds are small and the risk in practice negligible. But the evidence now marshalled by Kracke and Parker makes it clear, in our opinion, that amidopyrin in any form should no longer be used when other equally effective drugs are available and that it should be ordered only by a non-repeatable prescription. Too often patients are told to take a tablet when they feel like it, for the relief of pain or insomnia; whereas, for the present, it seems best to regard amidopyrin, and preparations containing it, as dangerous drugs.

AVIATION MEDICINE

THE careful medical selection of flying personnel, both for the Royal Air Force and professional civil flying, is one of particular importance to this country, especially at the present time when the rapid expansion of flying has resulted in a greatly increased demand for pilots in both the Service and civil branches. The necessity for a thorough and careful medical examination is now generally accepted, but in the early days of the late war this was by no means so, and the figures, quoted in the September number of the *Military Surgeon*, for British casualties among fliers in the first year of the war are eloquent proof of the need for such examination. The quoted figures show that, out of every 100 fliers killed, 2

¹ Kracke, R. R., and Parker, F.: *Jour. Amer. Med. Assoc.*, Sept. 21st, 1935, p. 960.

² Jackson, H., Jr.: *Amer. Jour. Med. Sci.*, 1931, clxxxviii., 482.

met their death at the hands of the enemy, 8 from some defect of their machines, and 90 through an individual deficiency such as physical unfitness, recklessness, or carelessness; 60 of them were attributed to physical defect. As a result of a special service being inaugurated for the "care of the flier," these fatalities due to physical defects were reduced from 60 per cent. to 20 per cent. at the end of the second year, and at the close of the third year to 12 per cent. In the United States the first standards laid down in 1914 were so high that no candidate was found capable of passing the tests. Brigadier-General W. H. Wilmer gives an interesting account of the gradual development of the present standards and of the various methods of testing the probable capabilities of the flier for high altitude flying. The routine use of oxygen at altitude has lessened the importance of tests in the decompression chamber as a regular procedure, and in this country they are no longer employed as part of the regular examination of aviation candidates. The decompression chamber is still used, however, for special research such as that entailed in the production of new oxygen masks and work of this nature.

Although the different nations employ varying methods in the medical selection of their flying personnel, the methods current in this country appear to be at least as thorough as those elsewhere; and the medical branch of the Royal Air Force, which examines both Service and civil pilots at the Central Medical Establishment in London, is fully alive to the importance of developing this relatively new but none the less important branch of medicine.

PULMONARY OSTEO-ARTHROPATHY

THE occasional association of bony changes with chronic pulmonary disease has long been familiar, but the causative link has been hard to trace. Much experiment in the department of surgery at the University of Chicago¹ has once more failed to reveal it, but the study of two well-marked cases of the disease has led to conclusions worth notice. It is recognised that any advanced pulmonary change may give rise to osteo-arthropathy if long enough continued, and chronic valvular disease may also cause it, when associated with passive venous congestion. The three commonest causes according to the Comperes and Adams are bronchiectasis, empyema, and tuberculosis with cavity formation; in their own two patients the primary conditions were blastomycosis of the chest wall (with secondary infection and empyema) and carcinoma of the lung (with involvement of the bronchi and large blood-vessels but no thoracic suppuration). Cases like the second of these are evidence against the idea that the changes in the bones are due to absorption of bacterial toxins, and so is the finding that periosteal new-bone formation sometimes occurs in people free from intra-thoracic disease, but living at high altitudes. The only factors common to the two cases studied at Chicago were dyspnoea, cyanosis, and a change in the hydrogen-ion concentration of the blood to the alkaline side. These signs, it is thought, like the changes at high altitudes, may all be explained as due to a decrease in the oxygen content of the serum, possibly with an increase in metabolic waste products. Besides the most constant and striking alterations, which are seen in the shafts of the long bones, there are other tissue changes, giving rise to the familiar clubbing of the fingers, and to painful joint conditions.

¹Comperes, E. L., Adams, W. E., and Comperes, C. L.: *Surg., Gyn., and Obst.*, September, 1935, p. 512.

characterised by synovial swelling, and later by erosion of cartilage from the articular surfaces. In the bones the periosteum is raised by successive layers of cancellous bone, seen at first in radiograms as laminae. The bone directly underlying the periosteum is denser and forms a sort of secondary cortex, and even in the later stages, when the distinct lamination has disappeared, the new bone does not fuse with the underlying shaft, but surrounds it.

The investigators' failure to reproduce the typical changes in dogs may, they think, be due to the unusual ability of these animals to compensate for loss of aerating tissue.

HODGKIN'S DISEASE

ALTHOUGH lymphadenoma, or as it is generally termed abroad lymphogranuloma, is known to have a wide distribution both in Europe and America, we have still much to learn concerning its incidence in the world generally, and especially on the various races of man. The clinical features of the disease and its characteristic morbid anatomy and histology are now thoroughly established. No disease, however, can be considered to be defined with satisfaction until its aetiology has been solved, and attempts to isolate a causal agent from cases of lymphadenoma have been handicapped by the circumstance that the disease does not appear to exist naturally in the animal kingdom, and in spite of many endeavours all efforts to reproduce it in animals experimentally have failed. Nevertheless, a certain amount of progress in this direction seems to have been made. The latest organised attempt to solve the problem of lymphadenoma, the Rose Research, was carried out by a combined effort at St. Bartholomew's Hospital between 1928 and 1932. Here the possible agency of various micro-organisms known to be capable of producing granuloma, such as tubercle bacilli, spirochaetes, and pathogenic fungi, was excluded. The only positive evidence found was the presence in lymphadenoma glands (in large numbers and apparently in pure culture) of minute "elementary bodies" similar in size, appearance, and staining properties to those found in vaccinia and certain other known virus diseases. Thanks to the work of E. Paschen in Germany, of J. Craigie in Canada, and especially of J. C. G. Ledingham in this country, it is now generally admitted that these elementary bodies are the actual causative micro-organisms in vaccinia. The presence in lymphadenoma glands of similar minute bodies, called by A. C. Coles "virus bodies," is thus highly suggestive.

During the course of the Rose Research it was also noticed that a suspension of the affected lymphatic glands of patients suffering from lymphadenoma, when injected cerebrally into rabbits, generates, after an incubation period of one or more days, a peculiar encephalitic syndrome characterised by loss of weight, rigidity, incoördination, and ataxia. As similarly prepared suspensions of lymphatic glands from patients suffering from conditions other than lymphadenoma had no such action, the intracerebral injection of the rabbit formed a biological test that promised to afford valuable confirmatory evidence in glands removed for biopsy in patients with suspected lymphadenoma and especially in cases where the histological appearance is atypical. During the three years that have elapsed since the Rose research report was published¹ confirmatory evidence of the value of this biological test in question has been

¹The Rose Research Report, London, 1932.

published from Edinburgh,² Utrecht,³ Belfast,⁴ and Treviso.⁵ We learn moreover that up to March, 1934, at St. Bartholomew's Hospital glands from 102 patients in all had been submitted to the biological test on the rabbit's brain: 35 of them were from cases of lymphadenoma and 30 of these gave a positive result. The remaining 67 glands, from patients suffering from conditions definitely not lymphadenomatous, all gave negative results.

The exact nature of the agent or agents responsible for this syndrome in the rabbit has not yet been established. U. Friedemann⁶ has drawn attention to the fact that suspensions of normal human bone-marrow and occasionally of spleen and leucocytes of human origin can provoke similar symptoms in the rabbit by cerebral injection. This was confirmed a few months ago by Ian Mackenzie and C. E. van Rooyen⁷ who brought forward evidence to show that the agent concerned differs from Jochmann's proteolytic enzyme to which Friedemann had called attention in this connexion. The actual cause of this encephalitic syndrome is, therefore, at present unknown. Bortolozzi⁸ found in the rabbits succumbing to an injection of lymphadenoma gland substance histological appearances that he interprets as pointing to a generalised infection with some unknown agent, possibly a virus.

In view of all this work the paper published by E. C. Smith on p. 874 of our present issue is of considerable interest. He furnishes evidence that lymphadenoma exists among the indigenous population of Nigeria, and that glands from these cases not only show the characteristic histological changes of lymphadenoma, but also give a positive result in the biological test on the rabbit. He found that the cerebral injection of monkeys failed, as had also been found by the Rose researchers. Incidentally, Dr. Smith's further experiments with cultures of a diphtheroid bacillus isolated from lymphadenoma gland also provide further evidence of the comparative innocence of this organism which at one time was considered by some to have aetiological significance.

PERSPECTIVE IN MEDICINE

"NATURE meant him to be a healer, for he brightens up a sick room." This quotation from Oliver Wendell Holmes was used effectively by Dr. G. F. Still in his inaugural address to the students of King's College Hospital on Oct. 10th. His practical advice to supplement a "serene and cheerful countenance" with warm hands is likely to be appreciated by the future patients even of those among his audience who may be ungrateful enough to forget, in the course of time, the source of their good habits. Dr. Still's lecture was mainly concerned with the value of a proper perspective in diagnosis, prognosis, and treatment. The Utopian text-book, he said, would describe symptoms in such exact perspective that each disease could be recognised at once by the particular prominence of one symptom, the intermediate position of another, and so forth. But in practice observation and experience were of more value than text-book knowledge, especially if a fashionable idea is not

allowed to obsess the mind of the observer. For example, many cases of vomiting are due to causes other than acidosis; a daily slight rise of temperature may be a sequel to a common cold rather than a sign of tubercle; and wasting may be due to some failure of digestion dependent on faulty diet or defective teeth. In prognosis especially the right perspective is important; and the story of the rapid and complete recovery of a child showing what seemed unmistakable symptoms of tuberculous meningitis gave point to the welcome assurance that increasing years bring to a physician a more rather than a less hopeful outlook. Finally, in treatment proper perspective would ensure the adaptation of curative measures to the needs of the individual patient rather than the attempt to adapt the patient to the desired treatment. The account of the little girl in the last distressed stage of heart disease, exhausting her remaining strength by struggles with the resident medical officer who insisted on giving her brandy, provided a vivid picture of the evils of routine therapy. Other examples offered were the indiscriminate prescriptions for normal children of roughage in diet, glucose, and preparations containing vitamins. In dietetics above all, said Dr. Still, theory had to be constantly checked by experience and observation.

BRITISH AMBULANCE FOR ABYSSINIA

A FEW weeks ago Mr. J. M. Melly described in our columns (Sept. 14th, p. 632) the organisation of an ambulance service for Ethiopia in the event of war with Italy. This British Ambulance Service in Ethiopia has now been officially recognised by both the British and Ethiopian Governments under Articles 10 and 11 of the Geneva Convention. The advance officers, sent some weeks ago to Addis Ababa, Berbera (in British Somaliland), and Nairobi, have cabled that they have carried out their instructions successfully. Dr. T. A. Lambie, in Addis Ababa, has obtained the necessary permits for the personnel and transport of the unit to enter Ethiopia, either by the railway from Jibuti, if it is still functioning, or through British Somaliland; or, should the advancing Italians have rendered that route impracticable, from Nairobi, crossing the frontier at Moyale. He has been assured of the full coöperation of the Ethiopian Government in providing as much lorry and mule transport as possible, and the newly formed Ethiopian Women's Work Association has offered its services for the renewal of supplies of bandages and dressings. Captain J. Purves has reconnoitred the route of entry through British Somaliland to Harar and selected a suitable site for the field hospital in its neighbourhood. He now awaits the arrival of the unit at Berbera. Col. J. M. Llewellyn, in Nairobi, has reported on the alternative route of entry via Moyale on the Kenya frontier should the advancing Italians cut the Berbera-Jijiga-Harar line before the arrival of the unit. With the coöperation of I.E. the Governor and the medical missions in Kenya and Uganda, he is recruiting trained native medical personnel, and reports that 40 such native dressers and 3 Indian sub-assistant surgeons are available.

Meanwhile arrangements in London have proceeded as far as possible until the necessary funds are forthcoming. Applications from a number of medical men have been received but no selection of the seven medical officers required has yet been made, and applications are still being invited. An adequate salary, according to qualifications, is offered; young unmarried men, with some surgical experience, will

² van Rooyen, C. E.: *Brit. Med. Jour.*, 1933, I., 644; *Ibid.*, 1933, II., 562; *Ibid.*, 1934, I., 519. Ogilvie, R. F., and van Rooyen, C. E.: *THE LANCET*, 1933, II., 611.

³ van der Hoeven, J., and Hulst, L. A.: *Nederl. Tijdschrift voor Geneeskunde*, 1934, lxxviii., 4305.

⁴ Davis, W. B.: *Brit. Med. Jour.*, 1935, I., 321.

⁵ Bortolozzi, M.: *Bull. della Società Med. Chirurgica di Treviso*, 1934, I., 299.

⁶ Friedemann, U., and Elkeles, A.: *Brit. Med. Jour.*, 1933, II., 1110. Friedemann, U.: *Ibid.*, 1934, I., 517.

⁷ Mackenzie, I., and van Rooyen, C. E.: *Brit. Med. Jour.*, 1935, I., 406.

be given preference. The unit when complete will consist of one field hospital and one casualty clearing station, with 7 medical officers, 2 administrative officers, and the necessary transport officers, trained dressers, transport, and equipment. The money required to send the unit out and maintain it for the first three months in the field is £35,000. The unit will be able to start within two weeks of this sum being forthcoming. An urgent message from the Emperor of Ethiopia just received at the London headquarters of the unit states that the Northern Army is without medical aid and urges that an ambulance unit should be sent to that front without delay. The address of the British Ambulance Service in Ethiopia is 33, Alfred-place, London, S.W.7.

At the same time the Save the Children Fund (20, Gordon-square, W.C.1) is organising relief for Abyssinian refugees to the neighbouring territories of British Somaliland and Kenya. In view of the primitive conditions of the country it is felt that aid must be given to adults if children are to be efficiently helped.

THE PRICKLY PSYCHOLOGIST

THE various schools of psychology are apt to lay emphasis on their differences rather than their concord. In his inaugural address last week as chairman of the Medical Society of Individual Psychology, Dr. C. M. Bevan-Brown spoke regretfully of this tendency towards competition and antipathy and of its effect on the application of psychological medicine. Practitioners often say "when you agree among yourselves we will attend to you, but not before"; and Dr. Bevan-Brown thinks they are largely justified. But he does not agree with the statement, so frequently made, that the schools are irreconcilable and coördination hopeless; a common basis is discoverable if truly sought. It is unjustifiable to assume that any one school is complete or exhaustive and that correlation cannot therefore be expected; indeed, each school contains contributions to the whole problem not possessed by the others, and therefore complementation should be considered as well as correlation. In exhorting his society to give due weight to all views and to abhor sectarianism and bigotry, Dr. Bevan-Brown pointed out that so far as therapeutics is concerned it is fallacious to argue in terms of the various psychopathological theories only. The personality of the physician probably plays a much more important part than his particular theories, and the cures he obtains are often independent of his opinions.

SPECTRA OF VITAMINS AND HORMONES

THE application of spectrophotometric technique to the identification and measurement of organic substances which occur in nature only in very small quantities has helped enormously to advance our more exact knowledge of the vitamins. Association of a definite absorption band with a given substance makes it possible rapidly to follow up the most active fraction in a process of concentration and even to make quantitative estimations of the amount of the substance present. Quantitative estimation of vitamin A by measurement of its absorption in the ultra-violet at 328 mμ has become a matter of practical politics although there are many limitations and pitfalls in the application of the method. All this information is set out conveniently by Mr. R. A. Morton, D.Sc., in a little book recently published.¹

The further application of the method to the spectroscopic estimation of that part of the vitamin-A activity of a material which is due to the presence of the provitamin, carotene, is also described, the absorption in the visible part of the spectrum being here used. A valuable table gives the different absorption maxima of various carotenes and xanthophylls and derivatives of them, together with the comparative biological efficiency, if any, where known. Vitamins B₁, B₂, C, D, and E are also dealt with, although the existing information about them is less complete. The section on the hormones is less informative, since very little work has yet been done with them in this field, though the desirability of applying spectroscopic technique to their estimation is self-evident. The possibilities with respect to the sex hormones, for instance, are very great, but the technical difficulties are substantial, since these hormones are for the most part obtained from very large quantities of urine in which their presence in small amount tends to be masked by that of many other substances. Those proposing to pursue the study either of hormones or of vitamins from this angle will find here invaluable material collected from the scattered literature.

HOSPITAL SERVICES UNDER THE LOCAL GOVERNMENT ACT, 1929

THE Local Government Act of 1929 profoundly influenced hospital development by two instruments. The power of "appropriating" former poor-law hospitals was conferred on public health authorities; the power of providing hospitals for the sick, conferred on municipal authorities by the Public Health Act of 1875, was extended to county councils, including the L.C.C. More is involved in appropriation than mere transference from the Poor Law as is shown in Dr. MacNalty's first report as C.M.O. of the Ministry of Health, of which a brief review is given on p. 913. An appropriated hospital becomes an integral part of the public health service under the supervision of the medical officer of health and, while continuing to provide for the destitute sick, may be developed for wider requirements and may be coördinated with and assist the development of the specialist services of the authority as maternity and child welfare, tuberculosis, and venereal disease. Such development leads to an improved standard of construction and equipment and medical staffing. Coöperation with voluntary hospitals is also facilitated. Further, the enlargement of their sphere from that of individual boards of guardians to a wider authority may bring many hospitals into one coördinated scheme, allowing better distribution and classification of patients and economy of services, as is especially seen in the taking over by the L.C.C. of the functions of 25 boards of guardians and of the Metropolitan Asylums Board. It will thus be seen that the possibilities of organisation and development under the new system are very considerable. Thus in London by new construction and reconditioning 1823 additional beds have been provided since April, 1930, and further improvements are shown by "the provision of 11 new operating theatres, six new X ray departments, five new massage departments and three new dispensaries, in addition to the improvement or enlargement of existing provision under these heads at other hospitals." Better classification may also lead to bettering the lot of the chronic sick whose cause is so persuasively championed in Dr. Brander's presidential address to the Hunterian Society reported on p. 887.

Less detailed information is given in the reports

¹ The Application of Absorption Spectra to the Study of Vitamins and Hormones. By R. A. Morton, D.Sc., Ph.D., F.I.C., Department of Chemistry, the University of Liverpool. London: Adam Hilger Ltd. 1935. Pp. 70. 10s.

of the Ministry of Health and of its chief medical officer regarding development outside London, but sufficient to show that it has also been considerable. Thus appropriation for general hospital purposes has been effected by 30 borough and two county councils, representing a total on April 1st, 1935, of 24,140 beds. In addition, there is appropriation for special purposes, such as children's hospitals, fever hospitals, tuberculosis hospitals, epileptic homes, and mental deficiency institutions. Schemes for alterations and additions to existing accommodation are being carried out or are in preparation by a large number of authorities. The two official reports may be supplemented by reference to some annual reports of medical officers for 1934. Thus Liverpool shows an extensive programme of reconstruction, an increase in admissions over five years of 25 per cent., and a marked increase in the use of special facilities as X rays and pathological examinations. In Manchester, where the municipal hospitals provide three and a half times as much accommodation for the sick as do the voluntary hospitals, it has been found necessary to appoint an assistant medical officer of health in charge of the administration of hospital and municipal services; during recent months there has been reconstruction of the consultant services and the setting up of a Joint Hospital Board for the city. The report for Southampton indicates extension of the medical staff as well as improved equipment and the provision of a maternity unit. At Portsmouth municipal hospital there has been an increase in admissions of 20 per cent. in one year. Essex proposes to erect two hospitals of 500 beds, a hospital of 800 beds for chronic and infirm cases, and two convalescent hospitals of 100 beds. Surrey has approved proposals for the erection of a hospital of some 850 beds. Durham also proposes the erection of a central hospital. These are only illustrations of what is taking place throughout the country. It is gratifying evidence how effective has been the stimulus to hospital development of the Local Government Act.

SIR JOHN M'LENNAN, F.R.S.

THE sudden death last week of John Cunningham M'Lennan, D.Sc., F.R.S., whose name appeared in the last Birthday Honours list, removes a prominent figure in the scientific world, for if not a pioneer, M'Lennan did work characteristic of a man possessed of keen scientific acumen and great executive power. A fellow student with Ernest Rutherford under J. J. Thomson in the Cambridge Cavendish laboratory, M'Lennan spent most of his life in Canada, where he had been born and educated, and turned a small and badly equipped laboratory into one of the finest physics departments in the world, which remains a monument to his driving power and virility as the M'Lennan Institute at Toronto. In these years his most notable public achievement was the production of helium on a scale big enough to make it available for aircraft. But his main scientific work was in radio-activity, and while he did not discover the extraordinary electrical conductivity of metals at low temperatures, he brought it into the field of common knowledge. It should be recalled that nearly 30 years ago M'Lennan showed that what is known as spontaneous ionisation is largely due to the radio-activity of the earth's surface. In the field of optics it was M'Lennan that discovered the origin of the green line in the spectrum of the aurora, which had long puzzled physicists. In 1932, on retiring from the chair of physics at Toronto, M'Lennan

found in this country an outlet for his energy in the treatment of cancer by means of radium. It was he who induced the Union Minière of Brussels to loan large quantities of their stock radium for research, and he was instrumental in organising a clinical unit at the Radium Institute with representatives of the Medical Research Council and other departments. This radium beam therapy research afforded scope for his energies. He possessed the judgment to select the best policies to follow, the best methods to employ, and to sift the good ideas from the bad. He was himself still fertile in new ideas, and the design of a new radium unit with pneumatic transference of the radium embodies many of them. The high density tungsten alloy used in its construction was produced at M'Lennan's instruction. One of his aims was for a joint experiment at the Radium Institute and the Cancer Hospital with three 5-gramme units. This extension of work will take place in the next few weeks, and it is sad that M'Lennan did not live to see the fulfilment of the plans for which he had worked.

" ENSOL "

THE preliminary note¹ in which Dr. H. C. Connell, of Kingston, Ontario, describes his treatment of cancer does not justify the optimistic reports telegraphed to this country. The remedy he uses is a solution containing enzymes believed to be specific for malignant cells. It is prepared by placing human cancer tissue in tubes containing 0.85 per cent. saline solution and inoculating these tubes with a culture of *Bacillus histolyticus*. After 4-6 days' incubation the tissue has been digested by the enzymes secreted by the bacillus, and it is supposed that these enzymes will now prove specifically destructive to malignant cells. The contents of the tubes are filtered through a Berkefeld candle, and the resulting sterile fluid, known as Ensol, is injected intravenously or into muscles. Unfortunately Dr. Connell presents no evidence that the solution contains substances specifically destructive to cancer cells in vitro, and though experiments, in vivo, on mice with transplanted tumours are said to bear out his expectations, the director of the Imperial Cancer Research Fund in our correspondence columns this week reports that similar tests in this country have proved consistently negative. The clinical evidence is based on 30 cases, all of them inoperable, and only the first two patients showed striking improvement. In both these cases pain disappeared, the general condition improved, and the tumour masses regressed; but the period of observation since the beginning of treatment was at the time of writing only four months. In the other 28 cases there is little evidence of more than an easing or controlling of pain with a gain in weight following the treatment.

Dr. Connell has elsewhere committed himself to the statement of his conviction that this work when completed will solve the cancer problem, and we do not think this hopefulness justified by the published data. It appears that the account he gives of the preparation of ensol solution is not detailed enough to enable other competent bacteriologists to supply clinicians with an active product; for he adds that "steps have been taken to prevent the exploitation of the public and the profession by unauthorised interests" and that "no supply of this solution will be made available until its value has been definitely proved." One may well ask why, under these circumstances, the paper was published.

¹ Canad. Med. Assoc. Jour., October, 1935, p. 361.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXXIII.—PROGNOSIS OF NON-MALIGNANT DISEASES OF THE BREAST

Acute Affections

ACUTE affections of the breast tissue during lactation may, if vigorous treatment is adopted early, subside without suppuration. Should suppuration occur, convalescence is shortened and the total demand upon the patient's strength lessened if surgical treatment is delayed until a definite abscess can be localised. Even if the patient be gravely ill and more than one operation is required, unless there are constitutional complications present, such as renal disease or active phthisis, recovery after a shorter or longer convalescence is the rule.

Acute mastitis also occurs in non-lactating breasts. In these cases one segment only of the breast is, as a rule, affected, and suppuration does not occur. Complete resolution follows simple local treatment in a week or two. Relapses are not uncommon.

There is no evidence that carcinoma occurs with any special frequency in breasts that have previously been the site of acute inflammatory disease.

Chronic Affections

NEOPLASMS

1. *A fibro-adenoma*, the commonest simple tumour of the breast, does not become malignant. Cure of this condition follows local removal. The appearance later of a second similar tumour in the immediate neighbourhood of the first is the result of the growth of a second adenoma so small at the time of the operation as to have passed unnoticed. Cases of multiple fibro-adenomata are common. After many years a small fibro-adenoma may grow rapidly, and especially if this occurs during pregnancy the tumour may attain a great size in a few months. None the less, it remains a simple tumour although now given the more descriptive name of cyst-adenoma. If removed from the breast entire—its lobulated nature may render this a little difficult—or if eradicated by simple mastectomy, cure invariably results.

2. *Duct-papilloma*.—This affection of the breast is unique in being the only one primarily innocent which in time always becomes malignant. Prognosis depends, therefore, upon its recognition before this change has occurred, in which case local excision or simple mastectomy is curative. Unfortunately, in its early stages a duct-papilloma may be symptomless. If, however, either a watery discharge from the nipple with or without an occasional blood stain be present, or puncture of a cyst reveals the presence within it of blood-stained fluid, surgical removal of the affected breast without delay must be advised. If careful histological examination of the suspicious area reveals no penetration of the basement membrane by epithelial elements the prognosis is good.

SPECIFIC INFECTIONS

Tuberculosis.—This rare chronic affection of the breast may occur in a superficial form in or just under the skin, or more deeply as a granulomatous lesion of the breast tissue. Provided that the patient is not suffering from advanced tuberculosis elsewhere—e.g., in the lungs or kidneys—or that the breast is not affected by direct spread of the disease from rib or mediastinum, cure follows simple removal of the affected organ. If from delay in diagnosis or reluctance to adopt this radical line of treatment minor measures

are adopted, the disease may run a prolonged course with frequent relapses but with no appreciable risk of generalisation.

Gummata of the breast, if diagnosed, respond readily to antisyphilitic measures. A mistake in diagnosis will almost certainly result in operative removal of the organ with, of course, local cure.

Actinomycosis, the rarest of the three granulomata, has a grave prognosis, if, as is often the case, it is accompanied by an internal manifestation of the disease, or is due to continuous spread from the neck.

"*Chronic mastitis*."—This term is still used to describe the common clinical condition in which either a segment or the whole gland feels firmer than normal, with a coarse granular surface, but no lump palpable with the flat of the hand. Lenthal Cheatle prefers the name *mazoplasia* as avoiding any suggestion that inflammation is a factor in its production. His view, based upon prolonged study of the histo-pathology of sections of whole breasts, that the condition by whatever name it is called is never a pre-cancerous one, is borne out by clinical experience and is now generally accepted. The true frequency of the condition is only established by careful routine examination of the breasts of all female patients over middle age, rather than by concentration on those patients who complain of breast pain or a lump in whom examination leads to this diagnosis. It has recently been suggested, as the result of such routine examination in a large number of women, that the clinical condition is so frequent as to be almost physiological, complaint only being made of it if the induration is accidentally discovered or if, for some unexplained reason, pain is associated with it. In any case, evidence is accumulating which tends to absolve this clinical condition from any causal connexion with carcinoma. The removal of breasts, the site of "chronic mastitis," is not demanded therefore as a precautionary measure to avoid the danger of cancer.

As has been stated, many cases remain untreated because no complaint is made. When complaint has been made either of induration or pain or both, simple treatment by well-applied firm pressure, maintained at first by night as well as by day, will give lasting relief in a high proportion of cases. An alternative non-operative measure where this line of treatment fails is a course of X ray treatment, which also results in local resolution and disappearance of pain in most cases. Sometimes pain of a neuralgic character persists in spite of such treatment, but often such cases present other features which suggest that cancer-phobia or an unhappy mental state due to some other cause is a major factor in the persistence of the complaint. In such cases removal of the breast certainly cures the local condition, but may be followed after a longer or shorter interval by complaint of the opposite breast, leading to removal of this organ also.

"*Chronic cystic mastitis*."—To this condition in which with or without an area of breast induration and nodularity one or more cysts large enough to form definite tumours are met with. Cheatle gives the name *cystophorous hyperplasia*. The nature of the lump or lumps present is determined by careful examination with the fingers, or an exploratory puncture may evacuate the characteristic dirty opaque fluid contained in these simple cysts. Experience teaches that simple cysts associated with chronic mastitis when treated in this way by simple puncture but rarely

refill, although a similar cyst in a different portion of the breast may develop later. Should a cyst once tapped refill, further tapping is useless, and either local removal or simple mastectomy is required to effect a cure. I have personally never seen a case in which carcinoma has developed after the appearance of cysts of this kind, but Cheatle and others have described its presence in breasts removed on this diagnosis, and hold that in an unknown proportion of cases the process, which may cease at the stage of simple cyst formation in some regions, progresses elsewhere in the breast to cancer.

Conclusion

This brief survey of the outlook in non-malignant diseases of the breast suggests the following conclu-

sions. One only of their number—i.e., that form of epithelial activity which presents itself clinically as a duct-growth—is prone to malignant change and must be looked upon as requiring early surgical eradication. Of the inflammatory lesions only the specific ones, tuberculosis and actinomycosis, are of serious prognosis, when their appearance in the breast forms but a part of established disease elsewhere. And chronic mastitis, the clinical features of which are clearly defined and readily recognisable, is not a "pre-cancerous" condition, and even if intractable need not occasion alarm or the early resort to mutilating operative measures.

ERIC PEARCE GOULD, M.Ch., F.R.C.S.,
Surgeon to Middlesex Hospital.

SPECIAL ARTICLES

BRITISH MEDICAL ASSOCIATION

MEETING IN MELBOURNE

SECTIONS OF PUBLIC MEDICINE AND MEDICAL SOCIOLOGY

At a combined meeting of these sections, with Sir HENRY GAUVAIN in the chair, a paper was read by Sir RAPHAEL CILENTO (Brisbane) entitled

Racial Pressure Problems in the Pacific

Three propositions, he suggested, were mutually dependent. (1) Every previous culture has had its period of growth, vigour, and dominance; its period of arrest, stalemate, and disillusion; and its decline and fall. (2) Populations, as Malthus said in 1798, always tend to increase up to the limits of available subsistence, and indeed would inevitably do so were they not subject to the positive checks of war, disease, vice, and misery, and also to the prudential check of deliberate limitation. (3) In animals, plants, and also in societies evolution is both progressive and retrogressive constantly, and the specialisation to a particular environment which is a notable factor for advancement, becomes a fatal weakness when the environment is changed. Referring to the works of Oswald Spengler ("The Decline of the West," 1922), Sir Raphael said that Spengler's contribution was the demonstration that not only had the histories of all cultures a general similarity, but the course of each conformed so closely to one standard as to make all essentially identical. From ancient facts, therefore, present tendencies can in the gross be forecast. Spengler claimed that "all that is cosmic bears the hall-mark of periodicity."

The student of Spengler, he went on, would be struck by the fact that he makes no mention of disease or famine in the fate of cultures. The only sickness he knows is sickness of the soul, the only virility, that of the spirit. He seeks no physical stimulus in that "first stirring" towards progress in the basic barbarian mass; and for the fact that the life-blood of every culture pours away in an enormous decline of population he scouts any scientific explanation. He postulates as sufficient a metaphysical "turning toward death" seen only at the end of a culture and in city populations. Nothing was further from the truth. Rivers and others, in "Essays on Depopulation," had found precisely the same thing amongst the primitive savages in Oceania in their island atolls and forests. It was found, amongst the Pacific native cultures, that the

depression was secondary to sickness and under-nutrition. Population amongst these native races was found declining in places where native institutions flourished with all their original vigour, as well as where they had been destroyed; and the people were thriving in places where white men had entirely disrupted their social organisation, as they must inevitably disrupt it everywhere in the course of time. The factors operating adequately for decline were: (1) Introduced diseases, such as malaria, hookworm, and tuberculosis. (2) Faulty sanitation of environment. (3) Privation and poverty of diet. (4) Abortion and infanticide. Malaria and such chronic diseases were producing lethargy and bodily weariness which prevented anything but the most essential tilling of the soil or foraging for food, while the very poverty of the diet that resulted lowered the resistance to disease and so permitted more frequent disease, with constantly lessened food-supplies, until a point had been reached at which the human organism could no longer cope successfully with the situation. In the most sophisticated city and in the most primitive jungle, therefore, one saw identical results so long as disease and indigence ploughed the body and sowed despair.

Sir Raphael then reviewed ancient and contemporary history, in his examination of the status of women, and its relation to child-bearing. Depopulation and disillusion were merely the negative phases of the equally unbalanced ascent and expectancy of the population period. At the beginning of Queen Anne's reign (1704) the population of England was 6 millions, and only 1 million lived in the cities. In Malthus's day (1798) it had reached 11 millions, and the percentage in towns was doubled. Of the 105 towns of more than 25,000 people in England, 60 had come into being since 1825 (Ripley). The birth-rate increased somewhat in that eighteenth century, remained stationary until about 1876, when economic pressure made prudential limitation advantageous, and had declined persistently since. The death-rate fluctuated and then declined markedly as the fortunes of England rose with the Napoleonic wars. It followed that the great increase in population in this age of urbanisation was due largely to a decline in the death-rate and those favourable factors in environment that brought it about. The world of the nineteenth century was open to the exploiter; expansion was possible into many partly occupied territories, and potential markets lay on every side. A tremendous impetus was given to the Western peoples. In the Pacific it produced, inter alia, three "moonlight" civilisations, as

Spengler calls them, civilisations that take their light from a live source, and may even re-radiate it in a permanent form. They were the United States of America, Australia, and Japan. Japan, originally a "moonlight" offshoot of the Han civilisation of China (A.D. 220) definitely attached itself to the new light of Western civilisation in 1868, and will stand and fall with it. A Japanese culture per se there had never been except in an imitative sense, and the present Japanese Americanisation must not be regarded as Oriental on analysis. In the Pacific itself, our culture struck the Oceanic peoples with considerable violence. The old civilisations of the Dutch East Indies, with peace and increased productivity, responded by an increase of population from 8 millions in 1816 to 37 millions a century later; the specialised primitives of the Oceanic islands, on the other hand, lost 75 per cent. of their populations in two generations.

The apparent truth was, it seemed, that the population a country could support was the population it could provide with gainful employment. Was not this again merely the Malthusian "subsistence"? The rapid fall in the birth-rate, the declining proportion of youth, and with it the declining proportion of potential mothers, were all actually correcting the disparity between population production and consumption in all civilised lands except Italy, Russia, and Japan. This probably meant a new inevitability of conflict with or between these other Powers and a loss of frontiers and culture. The population of Japan had increased in 60 years from 28 to 60 millions. It had now reached saturation point. The density of population represents four persons to the acre of arable land, and is increasing. It appeared inevitable that on the present figures, Japan proper would reach a population of about 113 millions in 1967, at which period England and America would have reached their period of stalemated decline—and with them Australia. The lack of balance in the diet was of vital importance. In Australia the figures were generally unfavourable. The average age of the population was rising rapidly, and the proportion of youth declining. The natural increase for 1931 was half that for 1891. At the present rate it had been estimated (Exley) that the stable population of Australia was not more than 8,500,000, with excess females of 35 per 1000. The solution was immigration or ultimate invasion.

After reviewing the world situation generally, Sir Raphael concluded by emphasising the essentials of health and the dominant mentality, the requirements to ensure survival in the forthcoming period of increased pressure in the Pacific.

DISCUSSION

Sir JAMES BARRETT (Melbourne) said that in the Pacific the experience with imported labour had been that each race in turn left the fields and went into the city. In Fiji there was a remarkable institution of the native medical school, with four years training. It was run by the Rockefeller Institute and British Government combined. There was, he said, nothing physiologically speaking to prevent the white race from settling in Northern Australia. The birth-rate was better than in the southern cities, and there was practically no tropical disease. The reasons for failure to develop had so far been economic. In the Northern Territory, the rainfall was less than that required, and there could be no pastoral industry until irrigation was practicable. There had been about 70 million pounds spent on the development of Northern Territory and the present popu-

lation was about 4000. The maximum area of land suitable for cultivation in Australia was about one-eighteenth that of the United States of America. Great tracts of land in Queensland were suitable for pastoral and mineral development only. The greater part of tropical Australia would never be inhabited by us, or any other race.

Dr. D. G. CROLL (Brisbane) thought that Spengler's theory was unacceptable—the fault was the assumption that the present European culture was analogous to others. The present age differed from any other; it was the scientific age and had lasted about 100 years. The dangers from our Pacific neighbours should not be under-estimated. We must increase our population by the combined methods of immigration and raising the birth-rate. A full health service was the best safeguard for the future; the modern conception of health embraced the whole of the personality.

Rev. JOHN FLYNN (Sydney) asked: "Does history repeat itself?" Not entirely, as conditions alter from time to time. An international outlook was essential. It was hard for visitors to realise the size of Australia—one cattle station was larger than the whole of Switzerland! The settlement of Australia was dependent on meteorological factors.

Sir RAPHAEL CILENTO, in reply, deplored the tendency to emphasise the "desert complex" in Australians. The rich coastal fringe of Queensland, which had been described as the only fertile part of Northern Australia, was in acreage larger than the sub-tropical parts of Southern Australia. Science enabled impossibilities to become possibilities, and it was on these latter that we should dwell.

Tropical Medicine

Sir Raphael then took the chair, and Dr. G. CARMICHAEL LOW (London) surveyed briefly some of the great discoveries made in tropical medicine since the beginning of this century. These discoveries had led to vast improvements in the health of those residing in tropical countries, and incidentally to the recognition of tropical medicine as a special branch of medical science. Diseases peculiar to the tropics differed in many respects from those found in temperate zones, and it was this difference, combined with lack of knowledge on these subjects, which had led Sir Patrick Manson to institute special schools for the study of what is now known as tropical medicine. Though this term had been applied to a particular branch of medicine it should be remembered that those desirous of practising in the tropics needed a sound foundation of general medical knowledge. Many diseases, such as sprue and yellow fever, were restricted to the hot parts of the globe, whilst others such as malaria, dysentery, and cholera, although occurring in non-tropical climates, were much more common in the tropics. Another feature of tropical diseases was their transmission by insects, whilst protozoal and helminthic parasites were very important in aetiology. Hence the student wishing to understand tropical medicine needed a special training in entomology, protozoology, and helminthology.

Dr. Low referred to the growth in Europe of institutes for the study of tropical diseases, following the establishment of schools in London and Liverpool. Now America had schools, the three services all had special courses, and recently institutes had been founded at Bombay and Sydney. This development was reflected in the outlook of patients suffering from diseases such as trypanosomiasis and kala-

azar, who could now be successfully treated. In the past thirty-five years advances had taken place which rivalled those in any other branch of medicine. Dealing first with filariasis, Dr. Low said it was Dr. Joseph Bancroft, of Brisbane, who discovered the adult forms of the parasite in a lymphatic abscess of the arm in 1876. Cobbold, to whom the worms were sent for identification, named the parasite *Filaria bancrofti*. Yellow fever had been shown by the American Commission in Havana in 1901 to be spread by mosquitoes, and the causative agent to be a filtrable virus. This enabled the construction of the Panama canal to be completed, and the disease had been practically extinguished from the New World. Work on this disease in Africa by the Rockefeller Commission had greatly advanced our knowledge of the infection, whilst the work of Theiler, fixing the virus for the brain of mice, enabled protective inoculations to be made available for those proceeding to affected regions. The problems of trypanosomiasis and kala-azar—"black fever" of India—had also been solved early in this century, whilst ankylostomiasis and bilharziasis were helminthic diseases in which our knowledge had been notably advanced. Undulant fever, a great debilitating disease in our Mediterranean fleet, had been traced to infected milk.

Perhaps the greatest discovery in tropical medicine was that of the intravenous method for the administration of preparations of antimony (tartar emetic). It had enabled us to control trypanosomiasis (partly), kala-azar, ulcerating granuloma, and bilharziasis, and to rob these terrible diseases of their terrors. Credit was due to Broden and Rodhain for this revolution in therapeutics. In 1907 a second plague commission, by a series of careful experiments, had shown that the rat and its fleas played an important part in the spread of plague, the disease being transmitted from rat to man by the bites of rat-fleas. There had been little advance in the development of treatment. The conquest of beri-beri had been another triumph for tropical medicine—its incidence had been reduced to practically nil. The utility of emetine in amoebic dysentery had been well established, and liver abscess was now very rare.

Turning to the future of tropical medicine, Dr. Low said that many problems awaited solution—for instance, blackwater fever and sprue. Future discoveries would probably be made in the realms of biochemistry and experimental laboratory research. Tropical medicine was of paramount importance to Australia and the mandated territories, and the success of any enterprise in a tropical country was directly proportionate to the extent to which tropical diseases were controlled by a proper practice of tropical medicine in all its aspects.

Dr. C. L. PARK (Singapore), director of the Eastern Bureau, Health Organisation of the League of Nations, followed with a paper on the

INCIDENCE OF DISEASE IN EASTERN COUNTRIES

He agreed, he said, with Dr. Low that there was increased prevalence of certain diseases in the tropical countries. It was the prevalence of what were termed the major infectious diseases—plague, cholera, and small-pox—in Eastern countries and the lack of exact information in regard to their occurrence that had induced the League of Nations, in 1925, to establish an epidemiological intelligence bureau in Singapore. This bureau was kept informed by cable of the development and course of such diseases in every country throughout the East, and disseminated this information by wireless and cable.

Plague in the East existed in three main centres—India, the Netherlands Indies, and China. In India the mortality had fallen from 1,170,000 in 1907 to 30,000 in 1930. Epidemic prevalence was in the Punjab and United Provinces, whilst Bombay was the principal endemic centre. It would be noted that the absence of epidemics from Punjab had accounted in great part for the fall in mortality between 1927 and 1931. There was a definite seasonal prevalence, particularly marked in Punjab and United Provinces. The maximum seasonal prevalence in Bombay corresponded with the minimum in the epidemic areas. Webster's work in Bombay and Madras indicated that it was the "blocking" phenomenon that was influenced by climate—more infected fleas becoming "infective" when conditions were favourable. In the Dutch Indies the evolution of plague was demonstrated in Java. Introduced in 1911 via Soerabaya, it persisted in epidemic form in the interior of East Java until 1915. After a free period, extending to 1918, a further introduction, via Semarang, led to the infection in epidemic form of Mid-Java, which persisted until 1928. Subsequently West Java became infected via Cheribon, and now the disease was mainly confined to the mountainous districts of Bandoeng and Garoet, in Western Java. It had thus taken twenty years for the disease to reach West Java, and it was noticeable that there had been no tendency to recrudescence. The seasonal prevalence in Java did not correspond with that in India, the maximum period being reached in December in the wet season in Java, as compared with the March-April maximum in India, which is the dry season. In China there were three active centres—in Fukien, in Shensi-Shanis area, and in Manchuria. In each of these areas the disease was of bubonic type, and the *X. cheopis* was the vector. The opening up of roads and railways in the north, which was rapidly proceeding, might be the means of disseminating the disease. Control measures were: in India, the use of Haffkine's vaccine as preventive measure, along with the application of specific anti-rat measures; in Java, house reconstruction was carried out to destroy and prevent rat harbourage. In addition, large-scale mass inoculation was being used with a living avirulent vaccine prepared by Otten, in Bandoeng. High immunity was obtained. As regards transfer from one country to another, prevention consisted of measures of deratisation applied regularly and rat-proofing of vessels.

Cholera.—The mortality in India was shown to fluctuate from year to year, but the general trend was downward. The cholera season in India generally was the monsoon season, except in Bengal. Epidemic cholera was associated with high relative humidity. Control measures included a piped public water-supply, inoculation and use of bacteriophage. The value of the last-named was uncertain but it did reduce infectivity and hence indirectly epidemic spread.

Small-pox.—India was again the principal focus. Particularly favourable were figures from Java where in 1932 only 39 cases occurred in a population of 42 millions; also in Japan. This was due entirely to systematic vaccination and revaccination.

The control of malaria was, Dr. Park concluded, essentially a local problem.

In the discussion which followed Dr. F. W. P. CLOVER (Durban), Dr. E. T. BRENNAN (New Guinea), Prof. HARVEY SUTTON (Sydney), Prof. J. A. GUNN

(Melbourne), Dr. J. S. PURDY (Sydney), and Dr. A. G. BUTLER (Duntroon, F.C.T.) took part.

Dr. Low, in replying, stressed the use of quinine as a prophylactic against infection with malaria.

Weil's Disease

Dr. T. J. COTTER (Townsville, Queensland) gave an account of the outbreak of Weil's disease in North Queensland in October, 1933, the first known occurrence of the disease in Australia. In fatal cases death occurred between the eighth and the fifteenth days. Convalescence was sometimes very prolonged. Patients were all healthy adult males, workers in the cane-fields. There was no record of case-to-case infection. Heavy rat infestation was present on the fields. *Leptospiræ* were isolated from 30 per cent. of rodents examined and the pathogenicity established by guinea-pig inoculation. Dr. Cotter stressed the importance of the disease from both the health and the economic aspects. Rat infestation must be fought by repeated poisoning campaigns and clearing of harbourage. The question of prophylactic inoculation (vaccination) was worth consideration.

SECTION OF SURGERY

At a meeting of this section presided over by Sir CARRICK ROBERTSON (New Zealand) a discussion on

Prostatectomy

was opened by Mr. A. CLIFFORD MORSON (London). Radical cure, he said, was the ideal to be aimed at in adenomatous disease of the prostate; incomplete removal of the diseased portion of the gland resulted in recurrence. For this reason he was not in favour of transurethral methods; the patient was not permanently relieved of his symptoms. The Harris technique was, he thought, a definite advance on those of Freyer and Thomson-Walker. Not only was it a hæmostatic operation, but an attempt was made to obtain healing by first intention within the prostatic cavity. The post-prostatic pouch was obliterated by drawing down the base of the bladder to the level of the bed of the prostate; and, lastly, the bladder could be closed and the patient relieved of an otherwise uncomfortable convalescence. With the urethroscope and cysto-urethroscope he had observed the changes in the bladder and the urethra after the Harris operation. If there had been failure to unite the trigonal flap to the torn edge of the urethra, healing was by second intention. This area, which in his own cases varied from one to five millimetres, healed very slowly, taking up to six weeks, although the abdominal wound had already healed and micturition was almost normal. Pyuria persisted so long as there was an internal wound. Mr. Morson said he had adopted the Harris technique with certain minor modifications. An anterior lighted retractor was used together with a prostatic speculum. The speculum gave perfect visibility of the prostatic bed, and by compressing the vessels, produced hæmostasis whilst the sutures were being inserted. He preferred a figure-of-eight stitch to the anterior transverse sutures used by Harris, because it acted as a better hæmostatic and produced a better closure of the cavity. Division of the vas guaranteed avoidance of epididymo-orchitis. As well as this he attempted to sterilise the seminal vesicles by irrigation through the proximal end of the divided vas with 1 in 60 carbolic acid. There was a danger of secondary hæmorrhage if there had

been failure to approximate the trigone to the fractured urethral end. It usually occurred about 24 hours after the removal of the urethral tube. It responded readily to hot irrigations or suprapubic cystostomy.

Mr. JOHN TAIT (Melbourne) said that asepsis was essential in the Harris operation and this was difficult to obtain in all cases. The methods used to control hæmorrhage were packing, Pilcher's bag, and suture; and of these suture was ideal. With the use of the latter the danger of primary hæmorrhage had been abolished, although he remembered one fatal case following too early application of suction drainage. Secondary hæmorrhage still occurred on separation of the sutures. He believed that one of the factors in secondary hæmorrhage was early closure of the bladder, and he therefore kept a small tube in the bladder until after the fourteenth day. He agreed that it was important to divide the vas but the difficulty was to do this at the correct time.

Mr. F. MACKAY (Auckland) stated that the older methods had an evil reputation with the public, and this probably accounted for the sudden influx of transurethral methods which were not curative. He regarded the Harris operation as the ideal, but reserved it for adenomatous enlargement. Endoscopic methods were used for the fibrous and malignant prostates. Even after prolonged suprapubic drainage the Harris technique could be performed. Strict attention to the details advocated by Harris was essential for the success of the operation, particularly with regard to asepsis.

Mr. G. H. BURNELL (Adelaide) discussed the value of renal efficiency tests. The blood-urea test was inefficient and he relied upon the Thomas modification of the indigo-carmin test. A series of successive tests was of great value. If only one test was done it should be performed only after seven to ten days' catheter drainage. He strongly advocated the Harris technique. He always brought the trigonal stitch back through the apex of the trigone to prevent buckling. The vas was always ligated. Results from the Adelaide Hospital showed a mortality of up to 18.8 per cent. for non-sutured operations. With sutured operations the mortality was 4.9 per cent. In a small series using the Harris technique there had been no deaths.

Mr. RICHARD HARRIS (Sydney) regretted that his brother was unable to be present. Speaking on his behalf he wished to point out that their success had been due to rigid attention to detail. The mortality in 547 cases was 2.7 per cent. The incision was always a transverse one two inches above the symphysis pubis. Closure of the abdomen was not safe with a vertical incision. He claimed that by the intra-urethral enucleation of the gland, the verumontanum was left intact. They had found that by use of the Harris retractor the prostatic cavity could be seen perfectly well without any additional modification. He emphasised that the plastic was not by a flap of trigonal mucosa but by the whole thickness of the trigone. The anterior transverse sutures had been used satisfactorily and he preferred them to the figure-of-eight suture which tended to produce sloughing. The indigo-carmin test was relied upon solely after seven days' catheter drainage.

Mr. C. ROCHE (Melbourne) advocated the use of the resectoscope for selected cases, especially fibrous prostates and mild adenomatous disease.—Mr. P. GILL (Perth) supported the Harris technique, but

emphasised the importance of deep X ray therapy in some adenomatous glands.—Mr. JOHN KENNEDY (Melbourne) asked whether the figures given by Mr. Morson and Mr. Burnell were of selected cases. He considered that it was important in old people particularly to get the patient off the table quickly. In these cases he relied upon Pilcher's bag.—Sir HENRY NEWLANDS (Adelaide) noted with approval the post-operative investigation conducted by Mr. Morson. It was irrational to expect primary healing with digital removal.

Mr. MORSON, replying, said that he did select his cases; it was useless to perform prostatectomy on the nearly moribund. He was glad to hear that transurethral methods had not gained support in Australia. They were of some use in fibrous and malignant prostates, but even in the latter he thought suprapubic cystostomy was preferable. He had found that retention of urine followed the use of X rays in these cases. In reply to Mr. Richard Harris, he said that Mr. Harry Harris had watched his use of the figure-of-eight suture with approval.

With Mr. F. C. PYBUS (Newcastle-on-Tyne) in the chair, a discussion on

Carcinoma of the Colon

was opened by Mr. H. B. DEVINE (Melbourne). The problem before the surgeon in carcinoma of the colon was to reduce the high operative mortality, which ranged between 15 per cent. and 57 per cent. in well-equipped clinics. The disease was a relatively benign type of malignancy, and if the operative mortality-rate could be improved, it would be the one malignant disease eminently curable by surgery. He proposed to direct his remarks to carcinoma of the distal colon; he wished to state, however, that it was his practice in carcinoma of the proximal colon to employ an enterotome method rather than the sutured anastomosis of ileum to transverse colon. The technique had been published in THE LANCET (1931, i., 627). In carcinoma of the distal colon one of the main factors in the high operative mortality was the presence of intestinal obstruction, acute or chronic. The adverse pre-operative conditions which were present could be improved by:

- (1) Earlier diagnosis. He stressed particularly X ray methods showing a mucous membrane relief pattern.
- (2) Improvement of the patient's general resistance by intravenous therapy and transfusions.
- (3) Measures to combat the effects of intestinal obstruction. Routine colonic drainage should precede all operations for carcinoma of the colon and must be continued for an adequate time. The usual methods of drainage, caecostomy, and colostomy, with or without a spur, were ineffective because they did not completely and permanently disconnect the distal from the proximal colon.

The traditional methods of operation for colonic carcinoma were a sutured anastomosis and the Paul-Mickulicz technique. The former carried a very high mortality; the latter, though safe, was suitable only for carcinomata of the middle of the sigmoid or the transverse colon. In other situations the amount of bowel and lymphatic field which could be removed was inadequate. In cases which were not amenable to Paul's operation, Mr. Devine had devised a method of operating which he had employed with success. Its essentials were as follows:

- (1) The proximal and distal colons are "disconnected" at the transverse colon. The completeness of the disconnection is ensured by inserting the cut ends of the bowel into separate small openings in the abdominal wall.

(2) The "defunctioned" bowel is washed out with warm olive oil, so that the bacterial content was reduced.

(3) The growth and the correct amount of mesenteric leaf are subsequently excised.

(4) Closure of the "disconnecting anus."

In the upper part of the distal colon a sutured anastomosis can now be performed under aseptic conditions. In carcinoma near the recto-sigmoid junction the affected segment of the "defunctioned" distal colon is excised, the rectal stump closed and covered with peritoneum, and the cut end of the sigmoid implanted into the wound. At a later stage the anastomosis between the rectum and the sigmoid can be done without fear of failure. This anastomosis can be made by suture, but if the resection site is too low a telescopic method is used, the distal colon being drawn through the rectal stump.

Mr. V. HURLEY (Melbourne) said that most cases were seen too late, when intestinal obstruction or spread of the growth had occurred. He emphasised the importance of early diagnosis. Suspicion should be aroused by the presence of minor symptoms and signs, of which alteration in bowel habit was the most important. Occasionally upper abdominal dyspepsias and appendicitis were mimicked. Occult blood tests, routine sigmoidoscopy, and bimanual palpation were all necessary parts of the examination. Barium enema and barium meal, though essential, should not be regarded as the final court of appeal. Occasionally the administration of a barium meal was followed by faecal impaction and intestinal obstruction. Where intestinal obstruction was present he advised laparotomy and ileo-transverse colostomy for caecal growths; and proximal drainage, either colostomy or caecostomy, in the rest of the colon. In very ill patients caecostomy under a local anaesthetic was the operation of choice. He advocated the staged Mickulicz operation wherever possible. When mobilisation was difficult a sutured anastomosis with proximal drainage of the bowel was performed. The incisions could be planned so that the approach was directly over the growth. The anaesthetic for preference was local infiltration together with gas-and-oxygen.

Mr. ALAN NEWTON (Melbourne) agreed with the surgical procedures advocated by Mr. Devine for left-sided growths. With right-sided growths he preferred to perform an ileo-transverse colostomy. He could see no advantage in the Devine modification of the Mickulicz operation for these growths, as it was an equally long operation. Obstruction after a sutured anastomosis of this type was uncommon, but could easily be overcome by ileostomy under local anaesthesia.

Mr. JOHN RAMSAY (Tasmania) advised the Mickulicz operation for colonic tumours because of its ease and safety.

The CHAIRMAN (Mr. Pybus) spoke of the similarity of symptoms of these growths to those caused by the dyspepsias and by diverticulitis. Even at operation it was often difficult to decide between the latter and carcinoma. The real problem was one of early diagnosis. If this could be done, resection and suture could be performed with safety. He agreed with Mr. Devine's method of "defunctioning" the colon. Caecostomy gave very poor drainage. He suggested that special departments should be instituted at hospitals for the investigation of gastrointestinal cases.

Mr. DEVINE briefly replied to other speakers. He preferred a central incision to the incision centred

over the growth as suggested by Mr. Hurley. In answer to Mr. Newton, he said he thought his enterotome method for right-sided growths was safer than sutured anastomosis. The trouble with the latter procedure was not post-operative obstruction but infection at the suture line. He agreed with Mr. Pybus's statement that early diagnosis was the key to the problem, but until this was fulfilled he claimed that the methods he had advocated, particularly the "dysfunctioning" of the colon, would definitely reduce the operative mortality.

SECTION OF NEUROLOGY AND PSYCHOLOGICAL MEDICINE

At a meeting of this section, Prof. EDWIN BRAMWELL presiding, Dr. W. S. DAWSON (Sydney) opened a discussion on the

Psychoses of Adolescence

The subject, he said, was of importance, not so much by reason of the total number of cases occurring at this age-period, but because it was during adolescence that the first manifestations of two outstanding clinical syndromes appeared. The incidence of psychoses rose from the age of 15, before which insanities were infrequent. On the other hand, the history of some adolescent psychoses indicated that a change of disposition might occur several years before initiation of treatment. After the age of 20 the insanity-rate continued to rise more gradually. The onset of manic-depressive psychosis and dementia præcox showed a maximum incidence between 20 and 25 years of age. Epilepsy and delinquency showed a similar age-incidence pointing to a heightened instability at this period.

During adolescence body and brain attained their maximum development, although organisation of nervous structures proceeded afterwards. The activity of the endocrine system was increased and the sexual apparatus matured. The brain normally should function as the arbitrator between inner urges and stimuli derived from the exterior. It was probable that some forms of adolescent instability were due to unequal development of the controlling and impulsive mechanisms. Physique might outgrow prudence. An emotional disturbance, closely related to the transition from egocentricity to altruism, accompanied the physiological unrest of the period. Youth should be full of effort. The quiet passive adolescence was one that seemed most likely to develop the more serious psychoses. Erotic manifestations, provided they were kept within bounds, were less subject to repression and reprobation in these days. The classification Dr. Dawson suggested was:

- (A) Organic group .. Confusional psychoses.
Psychoses associated with epidemic encephalitis.
General paralysis and epilepsy.
- (B) Biogenic and functional group. Manic-depressive psychosis.
Dementia præcox or schizophrenia.

The confusional psychosis was not common in adolescence, apart from that accompanying an acute infective illness. Alcohol and the puerperium, common factors in later life, were not of much importance. Usually no previous psychopathic tendencies had been displayed, but a history of prolonged physical or mental distress was usual. In early and mild cases there was difficulty in concentration and an appearance of perplexity. Impairment of awareness of the environment was responsible for

suspensions of the actions of others. When the patient was silent or inaccessible, distinction from melancholia might not be easy. Some cases exhibited catalepsy and *flexibilitas cerea*. With the absence of any marked introversion the prognosis was good.

Closely associated were the mental disturbances of acute encephalitis, taking usually the form of a drowsy delirium, sometimes of the occupational type, with hallucinations or illusions of various senses. The organic signs usually but not always excluded a hysterical or psychotic stupor. Actual dementia might occur, as in neurosyphilis, but the striking features were deterioration of moral sense, and a proneness to impulsive violence uncommon in juvenile paresis. At times there was some difficulty in differentiating parkinsonism, melancholia, and catatonia; or again there might be a resemblance to neurasthenia or mild melancholia. Later the signs of prepyramidal disorder rendered the diagnosis clear. Attention to the mode of onset and the previous personality was of assistance. Such features as hallucinations, delusions, and oddities of behaviour common in dementia præcox were absent. Juvenile general paralysis accounted for only a small proportion of the psychoses of adolescence, the mental symptoms often resembling dementia præcox.

The term dementia præcox was first employed by Morel in 1860. Although well described by various observers, Meyer in 1906 opened new avenues to the understanding of the condition. He emphasised the importance of the distinction between fundamental and incidental symptoms. As fundamental he pointed to the lack of adaptability often displayed before the recognition of the actual psychosis. He also discouraged the emphasis on dementia. Part at least of the symptoms were due to a deterioration of conduct which was not beyond remedy. He and his pupils had attempted to define the prepsychotic traits. They found reticent seclusive unadaptable individuals, sensitive and passively stubborn; showing little interest in what was about them. They tended to live in a world of fancies. An emotional inadequacy was significant. Character development was liable to be stunted through the absence of social contacts. Unhealthy ruminations, sexual perversions, devotion to abstract study, religious exercises which savoured more of self gratification or of a maudlin sentimentality, were some of the undesirable accretions of introversion. This must of course be distinguished from the life of retirement and self-denial which was creative.

The manic-depressive group had also a hereditary and constitutional background. The incidence was greatest in adolescence and early adult life. In the prepsychotic personality there was often evidence of depressive and hypochondriacal trends. In a series of cases with depressions of all intensities, the speaker found that a third had a history pointing to marked introversion. The typical features of this psychosis in adolescence were hypochondriacal complaints and fears in depressed cases; and exaggerated egotism and over-confidence of personal capacity, with intolerance of discipline, and erotic trends, in maniacal cases.

Many of the cases could not be pigeon-holed into any of the above two categories, some showing features of all types. Our difficulties might arise from attaching an exaggerated importance to a minute analysis of ideation and behaviour, without proper reference to personality and circumstance. The more normal the individual, the richer his

interests; the greater the previous physical and mental stresses, and the more rapid the onset of mental symptoms, the better the prognosis. The principles of treatment laid down by Clouston in 1891 should not be departed from. "Build up the bone and fat and muscle" and "rather restrain the imaginative and artistic faculties and sensitiveness and idealisms generally, in the cases where such tend to appear too early and too keenly. . . . Cultivate and insist on orderliness and method in all things." Using Hughlings Jackson's phrase, there is usually some "intact remainder" to work upon. The recognition and correlation of anomalies of character and temperament during the school years, and the examination of the children of psychotic parents, offered a possibility of preventing or arresting more serious mental abnormalities.

Prof. K. H. BOUMAN (Amsterdam) dealt with schizophrenia as a form of genetic regression. Alzheimer in 1900 made clear that a loss of cells in the supragranular layers of the cortex occurred in dementia præcox. Nissl, Josephy (1922), Naito (1924), Bouman (1924-1928), Hechst and Miskolczy and others came to the same conclusion. It was a disease of cortical origin in which the ganglion cells underwent fatty degeneration and sclerosis and disappeared, the glia not usually being active. The third layer was most affected, but also the others, especially the fifth. Where clinically severe agitation had been present we might find glial activity, ganglion cells loaded with lipid, and blood-vessels surrounded with fatty substance. The disturbance of higher motor function—e.g., hyperkinesia, akinesia, katalepsia, katatonia—suggested that the striatal region might play some part in the disease. The speaker by cell counts of the cortex believed that there was a loss of cells in all the layers in the order 3, 2, 5, 6, and 4. Miskolczy gave the order as 3, 5, 6, 2, and 4. There must be a close connexion between structure and function. Kappers believed the functions of the six cortical layers to be as follows: layer 1 conducted the functions of the senses; 2 possessed short intracortical and receptive functions; 3 was an association of longer intercortical connexions; 4 had chiefly a complex receptive function; 5 and 6 a system of motor conduction. Layers 2, 3, and 4 therefore formed a place where afferent impressions were translated into motor activity. The third layer was young phylogenetically and ontogenetically. The main areas of cortex affected in schizophrenia were those peculiar to man. Mott's demonstration of alteration in the sexual glands, together with these changes, suggested an insufficient progenerative power of the matrix material of both tissues. The anatomical regression of the cortex created an organism with more primitive modes of thought, in which causal and logical relations disappeared.

Representatives of modern psycho-analysis, as Jung and Abraham, supposed the symptoms of schizophrenia to be connected with very early emotional experiences. The idea of regression was an essential part of all these considerations and studies; but in the psychoses, regression went back to a much earlier stage of psychological evolution than in any neurosis. There was a break between the ego and the world outside; fancy and reality flowed together, and the psyche retreated into a world of its own where very primitive forms of thought ruled. This was the world of the primitive, where reigned the myth; the world of the dreamer, the young child, the artist, and the schizophrenic as well.

DISCUSSION

Dr. A. W. CAMPBELL (Sydney) from his experience of practice in both England and Australia was of the opinion that the prognosis of the mental disorders of adolescence was rather better in this country, where living and climatic conditions are better. He confessed himself unable to foresee insanity in the young; and he thought the school-teacher best placed to undertake this early study.

Dr. C. FARRAN-RIDGE (Melbourne) dealt with the problem of the prevention of dementia præcox, apart from eugenic measures. He said that in the case of persons in whom the predisposition was strong, no environment however favourable, no training however well directed, would suffice to avert the development of the disorder. In the case of persons in whom the predisposition was of moderate strength shelter, guidance, and habits of training would sometimes prevent a breakdown. If the predisposition were slight the patient could often be helped to go further and accomplish more than if left unaided. The instinct in which he would be most lacking was that of pugnacity, and he should accordingly be made to realise the impossibility of getting through life without fighting.

Dr. J. K. ADEY (Melbourne) raised the question of the prognosis in dementia præcox. Some recovered, and he wondered if these could be separated from the incurable group. Forty per cent. of all primary dementals dying in Victoria showed small hands and narrow aorta. Cyanosis of the hands, even in warm weather, was common. He had recently taken skiagrams of the hearts of 45 primary dementals belonging to the silent non-violent group. Of these, 12 showed small hearts and cyanotic hands, and had not recovered; of the remaining 33 there had been 6 recoveries. He believed therefore that an X ray examination had some value in prognosis.

Dr. J. F. WILLIAMS (Melbourne) dealt with the pre-psychotic personality. It was difficult to distinguish types of personality which might become psychotic. He pointed out the value of the nursing schools at the hospitals. Personality defects might be modified in these schools, which were valuable for both difficult and prepsychotic children. Such defects as negativism, complete withdrawal and lack of interest might melt away in such an environment.

Prof. J. P. LOWSON (Brisbane) dealt with the psychological treatment of the accessible case. He thought that the psychoses were not nearly so unmodifiable as some years ago. Some may be reduced to the level of a neurasthenia. To accomplish anything one must be prepared to keep at them.

Dr. H. F. MAUDSLEY (Melbourne) remarked that many adolescents passed through a stage resembling schizophrenia and recovered to live normally. He distinguished certain types: (1) an acute pernicious type without prodromata; (2) a subacute type with remissions and exacerbations; (3) a type that was clinically cured.

NEW HOSPITAL FOR HERNE BAY.—The foundation-stone of a new hospital for Herne Bay was laid on Sept. 27th, when the dedication ceremony was conducted by the Bishop of Dover. The hospital will provide accommodation for 34 beds and it will be possible to add a further 50 later if they are needed. It will cost about £18,000, of which £13,500 has already been raised.

THE WAR MENTALITY

AN ADDRESS TO STATESMEN

WHAT follows is the text of a letter sent by 350 psychiatrists and psychologists to "all the statesmen of the world." It is issued from Haarlem by Dr. J. Roorda, hon. secretary of the committee for war prophylaxis of the Netherlands Medical Association. The names reproduced below are those of signatories in the British Isles:—

TO THE STATESMEN

SIR,—We psychiatrists, whose duty it is to investigate the normal and diseased mind, and to serve mankind with our knowledge, feel impelled to address a serious word to you in our quality of physicians. It seems to us that there is in the world a mentality which entails grave dangers to mankind, leading, as it may, to an evident war-psychosis.

War means that all destructive forces are set loose by mankind against itself. War means the annihilation of mankind by technical science. As in all things human, psychological factors play a very important part in the complicated problem of war. If war is to be prevented the nations and their leaders must understand their own attitude towards war. By self-knowledge a world calamity may be prevented.

Therefore we draw your attention to the following:

1. There is a seeming contradiction between the conscious individual aversion to war and the collective preparedness to wage war. This is explained by the fact that the behaviour, the feelings, the thoughts of an independent individual are quite different from those of a man who forms part of a collective whole. Civilised twentieth century man still possesses strong, fierce, and destructive instincts, which have not been sublimated, or only partly so, and which break loose as soon as the community to which he belongs feels itself threatened by danger. The unconscious desire to give rein to the primitive instinct not only without punishment but even with reward, furthers in a great measure the preparedness for war. It should be realised that the fighting-instinct, if well directed, gives energy for much that is good and beautiful. But the same instinct may create chaos if it breaks loose from all restraint, making use of the greatest discoveries of the human intellect.

2. It is appalling to see how little the peoples are alive to reality. The popular ideas of war as they find expression in full-dress uniforms, military display, &c., are no longer in keeping with the realities of war itself. The apathy, with regard to the actions and intrigues of the international traffic in arms is surprising to anyone who realises the dangers into which this traffic threatens to lead them. It should be realised that it is foolish to suffer certain groups of persons to derive personal profit from the death of millions of men. We come to you with the urgent advice to arouse the nations to the realisation of fact and the sense of collective self-preservation, these powerful instincts being the strongest allies for the elimination of war. The heightening of the moral and religious sense in your people tends to the same end.

3. From the utterances of well-known statesmen it has repeatedly been evident that many of them have conceptions of war that are identical with those of the average man. Arguments such as "War is the

Supreme Court of Appeal" and "War is the necessary outcome of Darwin's theory" are erroneous and dangerous, in view of the realities of modern warfare. They camouflage a primitive craving for power and are meant to stimulate the preparedness for war among the speaker's countrymen. The suggestive force of speeches made by leading statesmen is enormous and may be dangerous. The warlike spirit, so easily aroused by the cry that the country is in danger, is not to be bridled, as was evident in 1914. Peoples, as well as individuals, under the influence of suggestions like these, may become neurotic. They may be carried away by hallucinations and delusions, thus involving themselves in adventures perilous to their own and other nations' safety.

We psychiatrists declare that our science is sufficiently advanced for us to distinguish between real, pretended, and unconscious motives, even in statesmen. The desire to disguise national militarism by continual talk about peace will not protect political leaders from the judgment of history. The secret promoters of militarism are responsible for the boundless misery which a new war is sure to bring.

International organisation is now sufficiently advanced to enable statesmen to prevent war by concerted action. Protestation of peace and the desire for peace, however sincere, do not guarantee the self-denying spirit necessary for the maintenance of peace, even at the cost of national sacrifice. If any statesmen should think that the apparatus to ensure peace is, as yet, insufficiently organised, we advise them to devote to this purpose as much energy and as much money as is now being expended on the armaments of the various countries.

We cannot close without expressing our admiration of those statesmen who show by their actions that their culture and morality are so far advanced that they can lead peoples to a strong organisation of peace. In our opinion they alone are truly qualified to act as the leaders of nations.

We have the honour to be, Sir,

Your obedient servants,

ADAM, G. H.	MACAULAY, D. I. O.
ARCHDALE, M. A.	MCCOWAN, M. L. M.
ASHBY, W. R.	MCCOWAN, P. K.
ATKIN, I.	MARTIN, F. R.
BARHAM, G. F.	MENZIES, W. F.
BAUGH, L. D. H.	MILLER, E.
BOLTON, J. SHAW.	MOLONY, C. B.
BROWN, W.	MORAN, P.
CALDICOTT, C. H.	NICOLE, J. E.
CANNON, A. T.	NORMAN, H. J.
CASSON, ELISABETH.	ODUM, DORIS M.
CRICHTON-MILLER, H.	O'FLAHERTY, C.
CROW, NORA A.	PATERSON, A. S.
DAVIES-JONES, C. W. S.	PERE, D.
EWEN, J. H.	PHILLIPS, N. R.
FINIEFS, L. A.	READ, C. STANFORD.
FISHER, J. J.	RICKMAN, J.
FOX, J. T.	ROBERTSON, G. D.
FRANKLIN, MARJORIE E.	RUDOLF, G. DE M.
GARROD, MARJORIE.	RUTHERFORD, H. R. C.
GEMMELL, D. T.	SCORESBY-JACKSON.
GLAISTER, J. N.	MARGARET.
GRAVES, KATHLEEN A. II.	SHAW, W. S. JAGOE.
GRAVES, T. C.	SKOTTOWE, I.
HAMILTON, J. G.	STRÖM-OLSEN, R.
HARDCASTLE, D. N.	STUNGO, E.
HILLS, H. W.	WATERHOUSE, A. T.
HORTON, W. W.	WATSON, H. F.
KIMBER, W. J. T.	WHITE, E. BARTON.
LADELL, R. G. M.	WHITWELL, J. R.
LEWIS, J. B. S.	WILKINSON, H. B.
LOWENFELD, MARGARET.	WRIGHT, M. B.

POST-GRADUATE LECTURES

Our last two issues have contained summaries of lectures delivered at the autumn post-graduate courses in London, or extracts from them. This week we publish abstracts of two lectures given at Charing Cross Hospital by members of the honorary staff.

THE CHRONIC ABDOMINAL INVALID

(MR. C. JENNINGS MARSHALL)

OF all chronic illnesses there can surely be none that offers such a series of diagnostic anxieties in the first place, and therapeutic problems in the second, as does Glénard's disease. The first care is always to see that no organic disease has intruded into this maze of functional symptomatology—itself so characteristic and easily recognisable, but nevertheless treacherous in its mimicry of organic lesions.

DIAGNOSIS

There is a mixture of general and local manifestations—always a suggestive point. Vague pains in head, back and limbs, lassitude, and vasomotor symptoms such as flushing, throbbings, palpitation, dyspnoea, are combined with flatulence, vague indigestion, general or local abdominal discomfort, constipation, and symptoms mimicking any of the diseases of the stomach, duodenum, caecum, appendix, kidney, liver, or gall-bladder. The kypholordotic stance, with protruberant lower abdomen and fixed upper recti, is characteristic; the general suggestion of atony is belied by the readiness with which the musculature goes into rigidity on palpation. Physical signs may indicate a low position of one or many viscera, and confirmation is obtained radiographically. Local spastic contractions of gut are often felt.

Differential diagnosis clearly must provide against an almost inclusive abdominal index; in the main we fear most an alimentary cancer; most of us probably will recollect a case or so of overlooked carcinoma coli labelled enteroptosis on the strength of a negative barium enema and a radiogram of a transverse colon near the pouch of Douglas. (I wonder how many thousands are wearing belts for the same reason.) Radiography has nowadays reached a very high pitch of accuracy in the hands of the expert; but it has not attained 100 per cent., and there is a small proportion of cases, already perplexing clinically, that become confusion worse confounded with an equivocal X ray appearance. Radiography is done an undeserved wrong when infallibility is claimed for it, this in particular referring to the ability to *exclude* disease. There is fortunately for our peace of mind the extremely simple faeces test for occult blood—a persistently negative finding is of value, three or four negatives practically excluding an alimentary carcinoma.

Extensive investigations on the whole are harmful, they suggest and "fix" symptoms; often, however, it is necessary to perform one or more of the quadruple radiographic "overhaul"—barium meal, barium enema, cholecystography, and Uroselectan urinary investigation. These will establish the diagnosis in a large proportion of chronic abdominal lesions—peptic ulcer, gall-stones, diverticulitis, alimentary cancer and other obstructions, and gross renal and ureteric disease, besides letting us have a very useful peep at the spine for carious or aneurysmal erosion, for spondylitis or carcinomatous deposit, or to

note that frequent cause of symptoms, glandular calcification.

The proper analysis of cases of Glénard's disease needs leisure, detachment, and freedom to let the patient "have her head"; for it is essential to arrive at a more accurate conclusion than enteroptosis.

PATHOGENESIS

The subject has been dealt with exhaustively and extensively, both before and after Glénard's voluminous treatment in the last decades of the past century. The sum of achievement is that the pathology has been completely established and then just as completely demolished a dozen times. In general the chief thing is the recognition that its beginnings are not in the abdomen; exploded are such explanations as dropping of stomach and other viscera, mechanical interference by bands and kinks, "hepatism," parietal weakness, diaphragmatic fixation, and (one mentions it with trepidation) constipation. The latter in particular needs special reference; for poisoning by delayed faeces is a theory so universally accepted, so eternally preached day in and day out by a most motley series of interests—e.g., the paraffin kings, the pillmakers, the wholemeal bakers, the fruit merchants, and the syringe manufacturers—that it needs courage to point out, a fact of particular importance with regard to Glénard's disease, that constipation is a very versatile producer of symptoms but it is practically negligible as a cause of disease. The subject is controversial, but I cite merely two facts—the complete and absolute relief of symptoms with clearance of the bowel and the uniform failure to find toxins in normal faeces.

Some of the features of enteroptosis seem to suggest that allergy may play some part; no doubt there are often food idiosyncrasies in association with the disease, but this is probably accidental and not inherent. Many facts point to the neurogenous nature—the spastic type of gut manifestation in which the colon may be felt contracted as it is seen under spinal analgesia, the features of "mucous colitis," and the radiographic observation of variations in the alimentary canal under emotional changes. Many points are in favour of the "general hypotonus" view; other features are spastic and resistive and ill in accord with this. Certainly the basal lesion is psychical, though perhaps only in the vulnerable hypotonic individual. It may occur in either sex in childhood, where the behaviourist school would see the disease as an ill-conditioned reflex; still more frequently in sexual adolescence and in the early years of matrimonial misfits; and also from uncongenial circumstances and occupations. No one invariable nervous lesion is found—there may be hysteria, obsessions, phobias, and occasionally true neurasthenia—apart from the many aspects of the inferiority complex and mental maladjustments of numerous kinds. Whether the disease abdominally is a general reaction to all kinds of functional disturbances or whether it is associated particularly with one type of nervous constitution is a question which seems best answered by the latter explanation.

TREATMENT

Clearly this disease calls for psychical rather than physical treatment; and it is a condition in which the family practitioner is at great advantage compared with anyone else, both for his special knowledge of circumstances and his facilities for unhurried and

undisturbed ministrations. Above all, *these folk should not be allowed to get to hospitals*, this is fatal to the hope of cure or even of amelioration. In the nature of things, cure can rarely be expected; it is not in the power of the practitioner to alter the milieu, undo the matrimonial misfits, or correct the "conditioning" of childhood. For the sex worries of adolescence the customary teaching of hard exercise, sublimation, and cold water is more effective in theory than in practice, as was pointed out by the great Parish Priest. Often it is better to preach the virtues of resignation: taking arms against a sea of troubles does not end them (there are plenty of proverbs to help), and it is the rebellious and resentful mind that suffers. But it must not be suggested to the patient that the defect is mental; this is both insulting and an indication that the doctor does not understand the case and clearly calls for a change of adviser; we must be careful about counselling psychiatry or psycho-analysis. Equally destructive of confidence is any tendency to poo-h-poo the abdominal manifestations; the attitude to take is that all the patients' sufferings must be attended to and relieved although there is nothing progressive or lethal present.

Belts are prescribed for this condition for the purpose of supporting the abdominal muscles, and of keeping the viscera up. It is readily demonstrated radiographically that almost all belts press the bowels farther and more firmly into the pelvis—admittedly the stomach is often kept up, but this does not matter anyway—but it is often found they give relief. The symptom relieved is the backache, and the belt is acting as a sacro-iliac brace, which is a better prescription. Mainly however the belt is a mental support. The prospect of relief from a belt should be tried out by the experimental use of a very firm binder round hips and abdomen with the hips well raised during application. Like arch supports for the feet, the belt induces further muscular atrophy and effectively prevents any recovery of tonus. The logical alternative has been and is urged by Goldthwait and his school; but if it is obvious that this aspect of the case should be treated by exercises, it is equally obvious that the tired patient must start at small things, never doing enough to exhaust. The ordinary bedroom "on-the-back legs raise" type of gymnastic is suitable and universally applicable.

Surgery has no place in the treatment of the disease: I am aware that the stomach, liver, kidney, and colon stitchers, the appendicetomists, and the adhesion-dividers still claim results; they well can, for there is almost always improvement for six months or so—and then it is time to do something fresh. Only urgent and imperative surgery should be done, but there is one exception to be made to this rule: the constipation of the disease is frequently accompanied by piles or fissure, and it is certainly necessary to break the vicious circle constipation—painful defecation—more constipation—severe pain. Constipation must be treated as it produces symptoms; carefully adjusted dosage of paraffin is most useful, but often the paraffin is passed unmixed with faeces, and such cases need a gentle regular aperient. (There are many elegant preparations; pills of the aloes, strychnine, and belladonna type, or the homely senna pod, will be found perfectly effective and easily regulated.) Many cases become enema-addicts, often incurably, so that leaving-off causes great distress; the "colon laundry," as the Americans call it, is a flourishing vested interest (no novelty

however, for it finds a place in Indian medicine ages B.C.) which apparently pleases a lot of patients, and we had best leave it at that. (This is not to say that lavage has *no* uses, but certainly that it should become a fixed habit.)

Flatulence is a common and distressing symptom, it can be dealt with by the homely peppermint water and baking soda; and also prevented by avoidance of excess carbohydrate and of rich meat in the diet. With regard to the latter, most of the patients are under-nourished and are benefited by plenty of butter and cream. While the popular idea that regularity of meals is essential to health is a ridiculous myth, there is no doubt that regularity of meals for these patients is excellent both as an article of faith—"an act whereby they may be saved"—and also as a means of getting them to eat more. With all deference to the Great Roughage Creed, this fraction of the food is most distressing to the enteroptotic and all fruit with skins, pips, fibres must be avoided. A very important point is that plenty of fluid must be taken both during and between meals (fluid with meals causes not the slightest harm despite the usual belief). Some cases need increased rest both before and after meals. (Yet one of the most striking features of the disease is the fact that when urgency drives, the patients prove capable of exertion, both mental and physical, over long periods of time, only, when the emergency has passed, to relapse completely.)

There is one point over which I end in a query. Some patients, in whom the symptoms have become "fixed" by over-treatment, are invalids to the end. But what happens ultimately to the average case? Only the general practitioner is able to tell us that; but I suspect that age brings a cure. Does the Olympic perspective and serenity of mellow years indeed smooth out the worries and perplexities? I should like to know.

PAIN AS A NEUROLOGICAL SYMPTOM AND ITS TREATMENT

(DR. H. A. DUNLOP)

SPECIAL attention is given to the position and character of the pain and its relation to bodily acts, such as movement or coughing. Pain may be due to stimulation of any part of the pathway which, beginning at the periphery and decussating in the neighbourhood of the central canal of the cord, is gathered into the spinothalamic tract and so transmitted to the thalamus. It is believed that the thalamus acts not only as a relaying station for the cortex cerebri, but also in virtue of its mesial and anterior nuclei—the so-called essential organ of the thalamus—enables protopathic sensation, including pain, to enter consciousness. Isolation of the thalamus may cause pain by release from the "damping" influence of the cortex. We must, however, beware of geographical concepts of consciousness. Pain may also be psychogenic; the mechanism of this variety is obscure but is bound up with memory and repression. Psychogenic pain is diagnosed by its unusual distribution, is apt to be "laid on with a shovel," and is unaccompanied by signs of organic disease; a talk with the patient will often reveal the discords and fears of his mind.

Apart from psychogenic pain, the following clinical groups are noted:—

1. *The neuralgias*.—(a) Trigeminal neuralgia is diagnosed by the type and distribution of the pain

which involves the territory of one or more divisions of the trigeminal nerve, usually the mandibular. The severity varies from mildness to agony. The pain is twofold: dull and continuous, and sharp and piercing. The tender spots of Valleix are found over the points where the branches of the nerve become superficial. If the third division is affected, there is unilateral furring of the tongue. The corneal reflex is normal. The skin is left tender after a paroxysm, during which reflex lacrymation, salivation, and spasm of the face (*tic douloureux*) may occur. Referred pain from the teeth must be excluded, but there is no need to sacrifice normal teeth. Analgesics are prescribed, such as aspirin and phenacetin. Gelsemium is useful. It should be borne in mind that amidopyrin carries a definite risk of producing agranulocytosis, and should therefore be reserved only for severe cases of trigeminal neuralgia.

Injection of the Gasserian ganglion usually gives relief for a year or two. In some cases operation needs consideration.

(b) Postherpetic neuralgia may be severe in old people. The scars of herpes zoster are found. The usual analgesics are tried. Massage aggravates the pain. X irradiation is of value in some cases. In a very old subject, opium may be justifiably prescribed. The pain of herpes prior to the eruption may cause great diagnostic difficulty and should always be borne in mind in cases of unexplained pain.

2. *Neuritis*.—I shall say nothing of polyneuritis, but confine my remarks to interstitial neuritis as exemplified by true sciatica. In this condition there is a slight general wasting of the limb; there may be fibrillation of the calf muscles. The ankle-jerk is diminished or lost, but the knee-jerk is brisk. Lasègue's sign is present. The nerve trunk is tender because the inflammation involves the *nervi nervorum*. The pain extends from hip to heel, and antecedent lumbago is the rule. Always do a rectal examination in a case of sciatica and examine the spine and hip-joint, X raying them if necessary. Examine the breasts for cancer.

In the treatment, in addition to counter-irritation, rest, and analgesics, we must mention subcutaneous oxygen injection—this is useful and for the most part safe, although I believe fatalities have occurred from air embolism. In a truncular sciatica, injection of physiological saline in the region of the nerve trunk is of value; while in a radiculitis epidural injection of saline with novocain and manipulation of the spine may help.

3. *Root pains* are referred to a segmental cutaneous area. They are aggravated by sneezing and coughing, which raise the pressure of the cerebro-spinal fluid. A patient recently with a root pain in the territory of the second lumbar segment (upper part of front of thigh) said her limb "went mad" with the pain. Root pains are recognised by the following: (a) there may be blunting of sensation in their distribution (*anæsthesia dolorosa*); (b) root palsies may occur—for example, wasting of an intercostal space, or loss of power in a group of limb muscles; (c) there may be signs of compression of the motor and sensory tracts in the cord and alteration in the reflexes. We look for signs of caries, growth, aneurysm, and lues. The cerebro-spinal fluid may show an increase in albumin. In women the breasts, in men the prostate should be examined for signs of cancer. Primary growths may be operable. Secondary deposits are best treated by deep X ray therapy; morphia should not be too long withheld but supplemented by aspirin, &c. In a few cases chordotomy is

justifiable; either the inferior sensory decussation may be divided along a few segments or the spino-thalamic tract severed. Remember that spondylitis deformans may cause root symptoms.

4. *Lightning pains* vary greatly in intensity. They occur in bouts and may be momentary single pains, or follow each other like machine-gun fire. The bout lasts up to a few days or weeks. The site varies from day to day, or even from moment to moment. Cases with lightning pains frequently have fixed pains, such as girdle pains, as well. Lightning pains occur in tabes dorsalis and in subacute combined degeneration of the spinal cord. In the latter condition, paræsthesiæ are often more troublesome than pain. In tabes, mercury and potassium iodide should be given and later a course of neosarsphenamine (N.A.B.); it must be remembered that this last may aggravate the pains for a time. Salvarsanised serum is apt to aggravate the pain. The usual analgesics should be tried, but the use of morphia is generally inadvisable, because of habit-formation. In subacute combined degeneration, intensive liver treatment is of value.

5. *Central pain* is best exemplified by the thalamic syndrome of Dejerine and Roussey. In this there are spontaneous movements of the contralateral side to the lesion, varying in type—tremor, chorea, or athetosis; dissociated hemianæsthesia; and sometimes constant pain. Unpleasant stimuli may cause intense distress; less commonly, agreeable stimuli excite unusual pleasure. In practice the pain of hemiplegia dolorosa of this type is extremely intractable; whereas, the arthritic joint pains of a hemiplegic respond to the ordinary remedies. Central pain, the source of which is the spinal cord, occurs in some cases of syringomyelia.

6. *Headache*.—All I shall say about this is that if we use the ophthalmoscope in all cases of headache we shall escape many diagnostic humiliations.

7. *Pain in the back* occurs in certain cases of meningitis; the theca is supplied by the nerves of recurrent sensibility. In some cases of acute anterior poliomyelitis in the preparalytic stage active flexion of the spine is intolerable. This may be due to the painful state of the back muscles or of the meninges. Intense muscular pain may occur in the abdomen in this disease mimicking appendicitis or in the limbs simulating osteomyelitis.

8. Lastly, *aching in the limbs* may occur in conditions of muscular rigidity, notably paralysis agitans.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The following all-day courses are to be given: gynaecology at the Chelsea Hospital for Women (Oct. 21st to Nov. 2nd); neurology at the West End Hospital for Nervous Diseases (Oct. 21st to 26th); chest diseases at Victoria Park Hospital (Oct. 28th to Nov. 2nd); urology at St. Peter's Hospital (Nov. 4th to 16th); medicine, surgery, and gynaecology at the Royal Waterloo Hospital (Nov. 11th to 23rd). Week-end courses will also be given as follows: physical medicine at the St. John Clinic and Institute of Physical Medicine (Oct. 26th and 27th); clinical surgery at the Royal Albert Dock Hospital (Nov. 2nd and 3rd); gynaecology at the Samaritan Hospital (Nov. 16th and 17th). In the series of lectures on modern gynaecology held at the Medical Society of London Dr. P. M. F. Bishop will speak on hormone therapy in gynaecology on Oct. 31st, and Dr. Norman Haire on practical contraception on Nov. 7th. Courses and lectures are open only to members and associates of the fellowship. The arrangements for this week will be found in our Medical Diary. Further information may be had from the secretary of the Fellowship, 1, Wimpole-street, London, W. 1.

OPENING OF THE MEDICAL SCHOOLS

On Oct. 11th Sir Walter Langdon-Brown spoke to the medical students of the University of Birmingham at the opening of their winter session. The following is part of his address.

FEAR AND PAIN

BY SIR WALTER LANGDON-BROWN, M.D., F.R.C.P.

EMERITUS PROFESSOR OF PHYSIC IN THE UNIVERSITY OF CAMBRIDGE

I WANT, if I can, to point out certain reasons, partly based indeed upon laboratory investigations, why recognition of the patient's individuality positively influences the results of treatment.

It always strikes me as curious that the most materialistic age of medicine—the end of the nineteenth century—was the most sceptical as to the effect of drugs. The discovery of hormones and vitamins did much to overcome this, for if the body was dependent on such chemical substances, it was reasonable to conclude that it would be influenced by other chemical agents. If the body can be affected by a fraction of a milligramme of a hormone or vitamin, it no longer seemed absurd to expect a dose of 5 grains of some drug to do so. But recent work has thrown an interesting new light on the mode of action of drugs which is germane to my thesis. We have long been familiar with the fact that a nervous stimulus can liberate a chemical substance from a gland; we now know, largely because of the work of Loewi and of Sir Henry Dale, that all nervous stimuli act by liberating a chemical substance, either acetylcholine or adrenaline, at their terminals. Moreover it has been shown that the substance, whatever it may be, on which those terminals act can be made either more receptive or non-receptive by drugs. It seems to me that the pharmacology of the future will have to interest itself more and more in the natural history of these receptive substances. All the time new facts are accumulating along these lines. Thus we know that thyroxin and adrenaline may be poured out in response to an emotional state, and Zondek maintains that barbiturates, for instance, may so alter the surface tension of a cell as to bar the way to the admission of thyroxin. Norman Myers has shown also that certain drugs can bar the way to the admission of bacterial toxins. Clearly a large field for research is opening out before our eyes.

Now we may assert that the two things which bring a patient to the doctor are fear and pain. These may coexist in very varying proportions. The unknown is a very potent factor in exciting fear. It is extraordinary to see the way in which a definite diagnosis, even if not an entirely favourable one, may relieve the patient's mind. Pain, even severe pain, may not be accompanied by fear if the cause is known. But under certain conditions pain may be accompanied by a sense of impending dissolution, which excites the most distressing fears, the "angor animi" of the ancient writers. This is not confined to dangerous conditions like angina pectoris, it may occur in the so-called vaso-vagal attacks. A somewhat similar state is sometimes evoked even by an overdose of insulin.

What is the genesis of fear? Fear is the exaggeration and sometimes the perversion of that alertness to the presence of danger which is such a valuable defensive mechanism. They are both expressed

through the same agency—the sympathetic nervous system, which mobilises the body for either fight or flight. Fright may accompany either of these responses, or may be the only response. Fear may be detached from its external motor response, but the internal manifestations may continue. Fear, whether of magic, evil spirits or the dark, panic fear dominated primitive man, and whenever our resistance is lowered by disease, by shock or by psychic conflict, we betray our ancestry, and that strange primitive being which lurks in the unconscious mind of us all peeps out. Every patient, whether he is clearly nervous or bluffs it out, comes to us in a state of fear. The degree of that fear will naturally vary greatly with the individual. The brave man dies but once, it is said, but so does the unimaginative one! Doctors notoriously make bad patients, because their imagination is aroused by the knowledge of so many possible complications and consequences. But I am profoundly sorry for the neurotic; he dies many deaths.

It is clear from what I said earlier that the activation of the sympathetic through fear must modify the response of the patient to the action of the drugs you give. Clearly it is the duty of the doctor to allay fear as much as possible; even more clearly he must avoid exciting fear to the best of his ability. He must always remember that the patient is more receptive to an unfavourable than to a favourable suggestion as to his health. If he fails in these respects, he will interfere with the success of his own treatment and cause unnecessary suffering.

And now as to pain. Physiologically speaking, what are the characteristic features of the transmission of pain? Other sensations have their special receptive end-organs, which are very responsive to their own particular sensation, and have a high discriminative capacity. But sufficiently strong stimulation of any sensory nerve will cause pain and naked nerve-endings only appear to be able to carry painful sensations. The sensation of pain is not so easily elicited but once it is aroused it is explosive in character and prolonged. To illustrate this from a familiar fact. At the right temperature water will give merely a pleasant sensation of warmth, but if you put your hand in water that is just too hot, the painful sensation comes perceptibly later than that of warmth. You may be able to bear the immersion of the hand, but if you increase the stimulated area by plunging in the whole arm, the number of painful impressions will mount up unbearably. Moreover, the pain will persist after you have withdrawn your arm. As we know, these painful sensations pass by their own special tract in the spinal cord, and at a special rate. They arrive at the thalamus which is the older, more primitive receptive structure than the sensory cortex, which enables attention to be concentrated on any part of the body that is stimulated. The sensations received there are also brought into relation with other sensory processes, past and present. The sensory cortex in fact contributes towards a control over feelings. It is by means of this cortical control over attention that a wounded soldier may feel no pain during the excitement of battle, or the hysterical patient experience nothing from the prick of a pin.

That pain, like fear, is a defensive mechanism is obvious. Indeed it is one of the highest value. I remember reading a tale when I was a child of a woodcutter who was promised by a fairy godmother

that one wish should be fulfilled. Smarting from a recent wound from his axe, he wished that he should not feel pain. In a short time he had cut and burnt himself so severely that he died. I always imagine that this story must have been based on a case of syringomyelia. Years ago a philosophic surgeon, James Hilton, wrote a medical classic entitled "Rest and Pain," stressing the value of pain as ensuring rest. The late Sir James Mackenzie also pointed out the value of cardiac pain in preventing over-exertion for a damaged heart. But unfortunately pain, as I have already said, may persist after its value as a warning signal is past. Pain then becomes a portent of a distressing kind.

Both fear and pain present difficulties to the doctor which are all the greater because there is no objective standard by which to measure them. Dilatation of the pupil, acceleration of the pulse, and even the galvano-psychic reflex are not really adequate to do so. The personal factor is enormous. Lombroso maintained that habitual criminals, particularly those who are addicted to crimes of great violence and brutality, have a marked degree of indifference to pain in themselves. In this matter extremes meet, for highly sensitive mystics and martyrs may in their state of spiritual exaltation show a similar indifference to pain. H. G. Wells in "The Research Magnificent" has a pertinent observation on this point. He makes one of his characters remark: "We exaggerate the range of pain as if it were limitless. We think . . . that it passes into agony and so beyond endurance to destruction. It probably does nothing of the kind. . . . The recorded behaviour of martyrs or the self-torture of Hindoo ascetics, of the defiance of Red Indian prisoners; . . . are they really horrible at all? Is it possible that these charred and slashed and splintered persons, these Indians hanging from hooks, have had glimpses through great windows that were worth the price they paid for them?"

Here we touch the fringe of a psychological mystery. It may be that to-day we tend to undervalue the spiritual exaltation that may accompany pain, as much as it seems to us to have been overvalued in the past. A distinguished colleague of mine, Prof. C. E. Raven, has put on record a terribly poignant account of his sufferings from a painful accident but he bears witness to the extraordinary exaltation which accompanied it. But I think he is of the stuff of which martyrs were made and I doubt whether to-day many of us would submit to torture over the theological differences between "homoseion" and "homoioseion" as many did in the past with apparent gladness. It may well be that analgesics and anesthetics have, by abolishing so much pain, made us more sensitive to what remains. To most of us the sufferings endured in the past seem frankly intolerable. But I note a tendency of some modern moralists, such as Hugh Walpole and Cowper Powys, to dwell on the psychological concomitants of pain with undisguised gusto. I must say I do not like that attitude; the frontiers of sadism are soon crossed.

For despite all that poets and moralists have written, and all that martyrs and mystics have endured, pain appears to the medical man to be an evil. He sees many more characters deteriorated than elevated by prolonged pain. I have read with deep sympathy the graphic and courageous account by a surgical friend of his unbearable sufferings from the agonies of thrombarteritis obliterans, but I note that it was when the pain was relieved by amputation that he was able to acquire a gracious

and philosophical calm. Indeed Schopenhauer rated the cessation of pain as one of the few positive pleasures in this world. It may well be that it is just because I have experienced singularly little pain in my life that I regard it as an evil. But it is one of the curious facts about pain that it is usually speedily forgotten, which hardly argues that it is a good thing. Anyhow we are called upon to relieve it, and relieve it we must if we can. It is not for us of all people to argue as to its possible benefits.

And here we are up against another difficulty. Hippocrates, the father of medicine, said "of simultaneous pain in two places, the lesser is obliterated by the greater." Which is greater, physical or mental pain? Few would doubt that the latter is worse. Certainly medical men are constantly seeing instances where patients seek a physical pain as the relief to mental pain. For the former can be talked about and will excite sympathy, the latter they prefer to bury in their own bosoms. And then comes the magician, offering new lamps for old, new pains for old, and pains that can be talked about. In our work we must be constantly on the watch for these substitute pains and search for the underlying mental or emotional cause. An instance comes to my mind of a young lady in the early twenties who suffered according to her own account from excruciating abdominal pains. But she firmly refused to have the cause of these pains investigated by any modern method. Then her father died and left her well enough off to be independent. She rose from her bed of suffering, quarrelled with her mother, and ran away with the married chauffeur to live happy, if not ever after, at any rate up to date! By concentrating sufficient attention on any part of our anatomy we can develop a pain there, and it is all the easier to have a somatic pain if at the same time the emotional sympathetic nervous system is keyed up. I imagine that the stigmata of saints, if not self-produced, were self-induced in some such way.

Clearly it is psychotherapy and not drugs that are called for in cases of substitute pains. But in the cases of physical pain it is clear that the psychological factor also enters into treatment. To come back to my starting point, it is evident that the state of the emotions can very definitely influence the action of the drugs we employ. And herein we find the scientific explanation of the fact that hope is the best of tonics.

WELFARE OF CRIPPLES AND INVALID CHILDREN.—

A conference on this subject is to be held in London on Nov. 7th and 8th by the Invalid Children's Aid Association and the Central Council for the Care of Cripples. After Sir Kingsley Wood, the Minister of Health, has given an opening address on the Thursday morning there is to be a discussion on infectious diseases and their after-effects and on immunisation and other measures that can be taken against them. This will be opened by Sir John Broadbent, Surgeon-Captain S. F. Dudley, Dr. J. Alison Glover, Dr. Matthew Burn, and Dr. W. J. Pearson. Thursday afternoon's meeting will consider the problem of physical handicap in modern life, while the whole of the next day will be devoted to the after-effects of accidents and rehabilitation therefrom. The speakers at Friday's discussions will include Dr. H. C. Carr, Dr. Elizabeth Casson, Mr. S. A. S. Malkin, Dr. Gynecology-Moore, and Mr. D. C. Norris. The conference on practical the Drapers' Hall, Throgmorton-street, and lectures are learn that a certain number of complimentary fellowship. the first meeting will be issued to men and v found in our in practice. Application should be made y be had from Invalid Children's Aid Association, 117, Pimpole-street,

PUBLIC HEALTH

On the State of the Public Health

THE first annual report¹ of the chief medical officer of the Ministry of Health to be issued over the name of Dr. Arthur MacNalty follows its 15 predecessors closely in form and arrangement. The work recorded in it was done under Sir George Newman, to whom graceful tribute is paid by his successor. The first section, which is an innovation, describes the functions and organisation of the Ministry itself. Then follow the essential vital-statistics tables. The birth-rate shows a rise of 0.4 per 1000 over the 1933 figure, which was the lowest on record. Coincident with this there was a fall in the death-rate of 0.5 per 1000. It is noted with justifiable satisfaction that the infant mortality-rate reached the record low figure of 59 per 1000 births. Death-rates for certain areas of County Durham for the years 1930-34 are given, with a summary of the findings of the commission which investigated the allegation that there had been a substantial and progressive deterioration of the public health in these distressed areas. Dr. MacNalty remarks that the evidence contained in this report, evidence which is congruent with much other information available to the medical department, shows that even in the most distressed areas of the country the measures taken by public authorities and the generous efforts of individuals have, so far as the usual indices of health can be trusted, largely held in check the deleterious influences of unemployment and reduced income. At the same time, he adds, the report gives no grounds for complacency. No inquiry can accurately evaluate the grave indirect dangers to health of mind and body which prolonged unemployment involves, and the Ministry is closely watching the position.

GENERAL EPIDEMIOLOGY

The almost complete freedom from small-pox and the lessened incidence of all infectious diseases except scarlet fever and diphtheria are welcome facts. The satisfactory progress made in efforts to produce a bacteria-free vaccine lymph from the chorio-allantoic membrane of chick embryos is recorded. Details are given of five cases of acute nervous disease following vaccination, and it would have been interesting to know the total number of primary vaccinations performed on children of school age and adolescents.

There were 20,000 more cases of scarlet fever than in 1933. Reference is made to the growing realisation that scarlet fever is only one manifestation of the hæmolytic streptococcus, others being tonsillitis and puerperal fever. The question of return cases is discussed; more stress might perhaps be laid on the part played by antitoxin in expediting cure and, by discharge from hospital in the fourth week, in lessening the risks of cross-infection. The public should know that the occurrence of cross-infection or a return case is not evidence of neglect and that discharge of an uncomplicated case in the fourth week is good practice.

Diphtheria incidence was up by over 21,000 cases, the fatality-rate being 5.9 as against 5.5 in 1933. It is pointed out that diphtheria is a personal disease and that wide fluctuations of incidence are to be expected; further, that the rise in the fatality-rate may be due to the inclusion of a smaller number of mild cases than in previous years. Here again the rise might be given; there is no uniformity

of practice, and as long as cases with no clinical manifestations of the disease are admitted as diphtheria patients to some hospitals and not to others comparative statistics will continue to be valueless. The proved variation in virulence of different types of bacillus is referred to. No definite opinion is expressed on the value of immunisation. The public would appreciate a dispassionate verdict on this, perhaps the most vital public health problem of the day.

Practitioners will read with interest the account of the incidence of leptospirosis (Weil's disease) in those whose work entails contact with water open to contamination by the urine of rats.

MATERNITY AND CHILD WELFARE

The general improvement in the services is reported and tribute is paid to the efforts of public health authorities, practitioners, medical officers, and midwives to reduce the persistently high maternal mortality-rate. A summary of the various steps taken or suggested by the Ministry is given, together with a list of the county boroughs in which conditions are being specially investigated on account of the high average-rate obtaining over a period of years. We would suggest special reference to towns where improvement has been made; nothing is more calculated to discourage an authority than to continue to include it in the "black list" on account of its ten-year average when it has already effected substantial reductions. The value of coöperation between practitioners and the medical officer of health is stressed: without such coöperation no permanent improvement can be expected. The value of reasonable publicity and propaganda is admitted. Reference is made to the unsatisfactory position of the average midwife at the present time and sympathetic mention is made of proposals under consideration for a full-time midwifery service.

TUBERCLE—V.D.—CANCER

There is nothing startling in the section devoted to tuberculosis. The after history of cases, problems of employment, the infection of home contacts, the effect of housing conditions are among the subjects discussed. Appreciative reference is made to improvement in the equipment of dispensaries particularly as regards facilities for X ray examination and to the cordial relations existing between practitioners and tuberculosis officers.

Much of the section on venereal diseases deals with the comparative value of ad-hoc and other types of treatment centre. It appears that the fear that transfer of the centre from a voluntary hospital to a municipal clinic would lessen efficiency has proved groundless; in most cases, indeed, the reverse, shown by an increase in attendances, has been the case. No reference is made to a problem which would appear to require immediate central investigation—viz., the risk run by road transport workers through the development of a new profession; that of the travelling prostitute. Presumably the matter is being investigated.

There is no improvement to record in the incidence of, or mortality from, cancer, although hope is expressed that a peak of mortality will shortly be reached. An extremely valuable table of deaths arranged according to the site of the lesion is given and a statement on the progress of research and on the work of the Radium Commission is made.

¹ H.M. Stationery Office. 3s.

Other sections deal with nutrition, milk-supplies, food standards, food poisoning, and appropriation of hospitals under the Local Government Act—all matters of first-rate importance.

In concluding this brief review we commend to the deliberate study of every medical man and woman Dr. MacNalty's first report. It deals with many controversial matters and will be quoted widely in the lay press. On some of these an authoritative pronouncement from the chief medical officer would be welcomed, not only by the profession but by the public. The reputation of the Ministry of Health stands high with the people of this country, and the report might perhaps go further in tendering advice about matters on which there is now much misguided and contradictory publicity.

Pneumonia and the M.O.H.

Acute primary pneumonia, together with acute influenzal pneumonia, became compulsorily notifiable by medical practitioners in 1919. A memorandum which was issued at the time by the Local Government Board has now been reissued in a revised form by the Ministry of Health. It was never anticipated that in the present state of our knowledge the mere notification of pneumonia and the action consequent thereon would result in any great immediate reduction in the total incidence of the disease, but it was thought that the public might thereby be awakened to a sense of the gravity of the malady. It was thought, too, that notification might supply valuable statistical information as to the distribution of pneumonia, and contribute in some measure to a reduction in the mortality from it, by bringing to light those cases in which the local authority could help by providing nursing or other assistance or by arranging for institutional treatment.

It may be frankly stated that on the experience of the last 15 years there appears to be little evidence that the notification of pneumonia serves a useful purpose. The majority of medical officers of health receive the notifications and spend the minimum of time on inquiries. None the less it is still the statutory duty of the medical officer of health, following notification, to "make such inquiries and to take such steps as are necessary or desirable for investigating the source of infection, for preventing the spread of infection and for removing conditions favourable to infection." In practice attention will be more usefully directed to patients notified from the poorer streets and it may be found that skilled nursing is urgently required. Such nursing may be provided in various ways—e.g., by arrangement with a district nursing association or through the poor-law domiciliary service. In any case the nurse works under the instructions of the private practitioner or the district medical officer, as the case may be. Since the disturbance of a pneumonia patient involves special risk, great care is taken in selecting cases for treatment in hospital; regard is had to the sanitary condition of the home, the possibility of isolation, and the means and facilities for home nursing and general care. In some cases, however, removal to hospital may be the patient's only hope of recovery.

The pneumonia patient freely disseminates virulent pneumococci by droplets. Persons attending the patient do not appear to be subject to much risk of infection, but it is likely that they may become carriers and pass the infection on to others more susceptible. The patient is therefore isolated so far as is practicable. In a hospital ward the patient's bed should be separated from others by screening.

The sputum and the discharges from the nose should be carefully disposed of. Handkerchiefs should be boiled or (if of paper) burnt. Attendants on a pneumonia patient should observe the ordinary precautions necessary in dealing with infectious disease. The memorandum advises prophylactic gargling and gentle douching of the nose, but recommends the use of face-masks only in cases of influenzal pneumonia.

The local authority should provide facilities for the bacteriological examination of sputum and the typing of the organism. There is no evidence that the pneumococcus can survive for long outside the body and special disinfection of bedding or rooms is therefore unnecessary. When visiting a notified patient the opportunity is taken to deal with any obvious defect in sanitation which may be found.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 5TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2464; diphtheria, 1199; enteric fever, 37; acute pneumonia (primary or influenzal), 499; puerperal fever, 37; puerperal pyrexia, 114; cerebro-spinal fever, 11; acute poliomyelitis, 22; acute polio-encephalitis, 3; encephalitis lethargica, 6; relapsing fever, 1 (Widnes); continued fever, 1 (Battersea); dysentery, 23; ophthalmia neonatorum, 102. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 11th was 2803, which included: Scarlet fever, 944; diphtheria, 1119; measles, 23; whooping-cough, 288; puerperal fever, 17 mothers (plus 9 babies); encephalitis lethargica, 268; poliomyelitis, 16. At St. Margaret's Hospital there were 21 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 2 (0) from measles, 5 (1) from scarlet fever, 8 (3) from whooping-cough, 25 (1) from diphtheria, 45 (10) from diarrhoea and enteritis under two years, and 25 (0) from influenza. The figures in parentheses are those for London itself.

The only death from enteric fever occurred at Birmingham. Fatal cases of diarrhoea and enteritis were distributed over 25 great towns, the highest number being Hull 4, Nottingham and West Bromwich each 3, no other great town more than 2. Liverpool reported 2 deaths from measles, Manchester 2 deaths from scarlet fever, and Leeds 3 deaths from whooping-cough. Fatal cases of diphtheria occurred in 22 great towns, 2 each being reported from Southampton, Oldham, and Sheffield.

The number of stillbirths notified during the week was 272 (corresponding to a rate of 45 per 1000 total births), including 29 in London.

MANFIELD ORTHOPÆDIC HOSPITAL, NORTHAMPTON. Approved extensions to this hospital will include a new ward for 24 patients, eight single-bed wards for private patients, and more accommodation for the nurses' home. By next spring this institution should have a total of 180 beds; in 1925 it had only 20. The extensions will cost £10,000.

THE HYGIENE OF YOUTH.—A series of lectures on this subject will be given under the joint auspices of the Royal Institute of Public Health and the Institute of Hygiene at 28, Portland-place, on Wednesdays at 3.30 p.m., from Oct. 23rd to Nov. 27th. Dr. Alan Moncrieff will give the first lecture, on the early weeks of life in relation to the health of the adolescent, and the subsequent speakers will be Dr. L. S. T. Burrell (tuberculosis in youth), Dr. Reginald Miller (rheumatism and heart disease in youth), Mr. William Ibbotson (hygiene of breathing, hearing, and speaking), Prof. J. W. H. Eyre (adolescence and microbial infections), and Dr. R. Cove-Smith (pitfalls of physical training). The lectures are open to all.

CORRESPONDENCE

THE ATTITUDE OF SURGERY TO
HÆMATEMESIS*To the Editor of THE LANCET*

SIR,—Mr. Gordon-Taylor concludes his address in your last week's issue with the words "... the golden age of gastric surgery will have been attained only when all cases of hæmorrhage from chronic ulcer come to operation within that space of time"—i.e., the first 48 hours. Some latitude may be allowed for a peroration, but the meaning is that all cases of hæmorrhage from chronic ulcer should be operated upon immediately.

Considerable responsibility is incurred by such a statement, and we are entitled to weigh the evidence produced in its support, especially as Mr. Gordon-Taylor gives no statistics of his own results, and contents himself with quoting from only one writer, Finsterer of Vienna. It will be noted that the statement is applied only to chronic ulcers, implying that the differential diagnosis from an acute ulcer can be made, at least with reasonable certainty, within 48 hours, including cases in collapse following hæmorrhage. With regard to the risk to life from ulcer hæmorrhages, Conybeare's figure of 2.5 per cent. mortality is commonly quoted, and there is no doubt that if all cases of hæmorrhage however trivial are included, the case-mortality is very low and is somewhere in this neighbourhood. But in the last decade statistics have gradually pointed to the existence of a serious group which includes nearly all the fatalities. Credit is due to Bulmer as being the first to indicate the existence of such a group when he studied the mortality in cases admitted expressly for hæmatemesis and found a mortality of 10 per cent. in 1927 and 16 per cent. in 1931. The separation of a severe group has been further advanced by the statistics of Aitken at the London Hospital and Lloyd Davies and Nevlin at St. Thomas's Hospital. Stated shortly, the latter writers used a criterion of below 20 per cent. of hæmoglobin, and thus separated a group in which the mortality was about 45 per cent., while the mortality of the remaining cases was 6 per cent., although all these had been admitted expressly for hæmatemesis or melæna. It is thus clear that there is a serious group in which there is a very high mortality, while outside this the mortality is low, although the hæmorrhage may be considerable.

Mr. Gordon-Taylor places considerable reliance on the views and statistics of Finsterer. The general outlook of this surgeon may be illustrated by two sentences which are quoted "Any hæmorrhage from an ulcer is almost as urgent as a perforation," "Bleeding from a chronic ulcer is an imperative indication for immediate surgery." Finsterer gives a table of his results of "immediate operation" on cases of hæmorrhage from an ulcer. He states that he only includes cases beginning with a massive hæmorrhage or with melæna with syncope, more trivial hæmorrhages being excluded. In these circumstances he performed gastrectomy within 48 hours in 39 cases, with one death, a mortality-rate of 2.5 per cent., the only death being in a man over 80 years of age. He concludes his article with the following statement: "Performed in suitable surroundings, 'operation for acute hæmorrhage gives the same good results as operation for non-bleeding ulcer.'" Such a statement is manifestly absurd, and a study of Finsterer's original article gives the impression of the same exaggeration throughout. Neither his statements

nor his statistics can be safely accepted nor deductions drawn from them.

The treatment of hæmorrhage will not be improved by these means. It does not assist to make sweeping statements that all cases of hæmorrhage must be treated surgically or treated medically. What we need to do is to distinguish those cases which should be treated medically, and those which should be treated surgically. May I return to the serious group in which the fatalities occur? It is not easy to give a clinical description of this group, but, as Aitken says, it is not difficult to recognise it clinically and to recognise if an individual case comes within it. Can we go further and decide whether an individual case in this group will live or die under medical treatment? Aitken says that we cannot do so at present, and my experience agrees with this. We must most of us have seen a desperate case recover on which a surgeon was unwilling to operate.

So far as the treatment of severe hæmorrhage is concerned, it is to this group that we need to pay attention. We do not know which cases will recover, and we do not know which should be operated upon and which should be treated medically, and so far as I am aware there are no statistics which are of assistance in comparing the results of medical and surgical treatment. Perhaps it may be possible for surgeons with an extensive experience to find from their records statistics bearing on this group, which can be compared with statistics of medical treatment. In the meantime, in fairness to our patients, we must decide the treatment of each case individually, with an open mind and with the coöperation of medical and surgical acumen.

I am, Sir, yours faithfully,
Devonshire-place, W., Oct. 12th. H. LETHEBY TIDY.

PROTEOLYTIC ENZYMES IN CANCER

To the Editor of THE LANCET

SIR,—In the *Journal* of the Canadian Medical Association for October, 1935 (p. 364), an article entitled "The Study and Treatment of Cancer by Proteolytic Enzymes" by Dr. H. C. Connell appears. In this article reference is made to the fact that the Imperial Cancer Research Fund had been asked by Dr. Connell to investigate experimentally his claim to have discovered a method of killing cancer cells in vivo—potentially a cure for cancer. We have prepared from mouse tumours, in accordance with directions received, the solutions which Dr. Connell calls "ensols" and have tested these "ensols" on the appropriate tumours of mice. In no case has the growth of a tumour been checked or affected in any way.

I am, Sir, yours faithfully,
W. E. GYE.
Imperial Cancer Research Fund, Queen-square,
London, W.C., Oct. 14th.

PLASTER TECHNIQUE IN TREATMENT OF
FRACTURES*To the Editor of THE LANCET*

SIR,—I have read with great interest your leading article of Sept. 28th on plaster-of-Paris, and I trust you will allow me to make a few comments, which are thus belated, because I was in Vienna when the article appeared. While every orthopaedic surgeon will agree with the main points of the article, yet I feel anxious lest the impression it will make on the rank and file of the profession may be an unfortunate

one; so that, like many another piece of propaganda, it may precipitate the very evil which it is intended to prevent. Thus:

1. Although the article states that good plaster work "still remains an exacting art, demanding not only some experience and natural aptitude . . ." yet the implication is that nearly all members of the profession ought to dabble in this art, disregarding the fact, which many of us know too well, that in the hands of the inexpert plaster often has disastrous effects—far more disastrous than those of stock-splints badly applied.

2. Another implication is that plaster should replace all other types of splint. Now for such conditions as wrist-drop the light vulcanite splint is incomparably better; while there is agreement among the majority of orthopaedic surgeons that plaster-of-Paris should only play a minor part in the treatment of scoliosis and many other spine conditions.

3. As regards technique: (a) only the advantages and none of the drawbacks of the *proprietary bandage* (celluloid-plaster) are referred to. It is noteworthy that Böhler uses only the condemned "hand-made" bandage; (b) the suggestion is made that the *padded plaster* has no place in surgery, but the present writer is convinced from a study in orthopaedic clinics all over the world, as well as from long practical experience, that such a statement shows an utter lack of conception of the possibilities of plaster-of-Paris. It is the badly padded plaster that should be condemned; the unpadded is equally detrimental in an unsuitable case.

4. Finally, in regard to Böhler's contribution to the solution of the fracture problem, I feel convinced from two weeks' recent study in his clinic that the profession will be misled if it is induced to believe that any widespread improvement in plaster technique will result in a corresponding improvement in the results of fracture treatment, however earnestly such progress may be desired by the profession and by the public. Böhler's plaster technique has serious rivals in U.S.A., France, and Italy (and let us not forget our own war-surgeons), but the organisation of his clinic has certain other features, which I feel convinced play at least equal parts in producing his admirable results. These are: (a) A team with a very experienced, as well as brilliant, surgeon at the apex of the pyramid and also fairly senior full-time surgeons carrying out the treatment under his direct supervision—what many British practitioners might characterise as a "fascist organisation," or a "one-man show." (b) A system of records and frequent attendances, reinforced by the financial weapon of insurance, which secures most detailed and continuous supervision of each patient until he is able to resume his place in the working community. (c) The provision of sufficient beds to allow a short period of *in-patient* treatment for every injury of joint, tendon, or tendon-sheath, even in the upper limb; also periods of from two to six months for all leg and thigh fractures. Pott's fractures with any swelling are given in-patient treatment with the limb raised and no plaster till the skin and circulation are recovered. (d) Finally, an expenditure on X rays, which would be regarded as grossly extravagant by most British voluntary hospital boards. It is this frequent and regular control by X rays of the position of the fragments which results in the early recognition of recurrent displacement, while there is still time to correct it; for even the unpadded plaster allows slipping in certain cases.

The limits of a letter do not allow for any thorough review of this wide and most important subject, but I trust that your courtesy in allowing me to trespass on your space to this extent may induce many of your readers to give careful thought to the above points, which are only some of the many deserving consideration.

I am, Sir, yours faithfully,

M. FORRESTER-BROWN.

Queen-square, Bath, Oct. 13th.

ORIGIN OF BOILS

To the Editor of THE LANCET

SIR,—Dr. Lockhart raises a very interesting question. After prolonged observation I should say that boils on the neck are almost entirely confined to the male, whereas there is a peculiar form of superficial eczematous dermatitis of the nape of the neck almost entirely confined to women. Boils on the neck may be associated with acne of that region or may occur independently. It is perhaps a curious fact that whereas acne is common in both sexes it is rarely found on the neck in women. If one studies the distribution of the hair on the neck it is found that the hair, where it grows low down, is apt to do so in two parallel columns, one on either side of the middle line, and these columns are much more frequently the sites of boils than the middle line. On the other hand, the "nape eczema" of women more frequently affects the middle line.

It would occupy too much of your space to go into the causation of boils from the constitutional side and I therefore confine myself to the local, especially as this is the aspect of Dr. Lockhart's inquiry. I agree that the use of the clippers is associated in some cases with the appearance of folliculitis and boils, but I offer a different explanation. It will be noticed, if attention is paid to the point, that in men who get boils on the neck the hair is coarse and grows low on the neck. Any habitually shaven man knows how uncomfortable his face feels on the pillow after being unshaven for three or four days. The short stiff hair is driven into the skin and worries the follicle. As the hair grows long enough to become flexible this irritation ceases. In the daytime men wear stiff or close-fitting collars which are liable to cause this follicular irritation where the hair is clipped short. They should therefore either allow their neck hair to grow long or shave it with a safety razor daily. For some years now women have had the clippers applied to their necks, yet one rarely if ever sees boils on their necks. I suggest that this is due to the fact that since the clipping has been customary the clothing of the neck has also been less close and rigid.

There remains the "nape eczema" of women. Some years ago I suggested that this might be due to the wearing of furs round the neck. I am here not alluding to dye dermatitis but to the mechanical irritation by the scrubbing of the neck with worn and broken fur. This would naturally produce an irritative dermatitis of superficial type and I have actually seen it produced on the throat in men by the use of a much worn badger shaving brush.

I should like to make it clear that I do not think that a dirty or infected clipper is a matter of no importance, but merely to point out what are I think the main causes of these diseases.

I am, Sir, yours faithfully,

London, W., Oct. 15th.

ARTHUR WHITFIELD.

TREATMENT OF SCABIES

To the Editor of THE LANCET

SIR,—Seeing that Dr. Kingston's excellent article on this subject in THE LANCET of Oct. 12th confirms the experiments which I myself made about 20 years ago, but failed to publish, I feel that I must now support his findings, and congratulate him on drawing attention to the fact that whereas the "sulphur treatment" has been handed down from one text-book to another as a so-called cure for this condition, this is far from being the case as is so commonly thought. The "cure while you wait system," as used in some hospitals, where the patient is given a sulphur bath, thoroughly scrubbed with a nail-brush and sulphur ointment applied, is I am sure doomed to failure. Much may depend upon the efficiency of the scrubbing and thereby opening up the burrows made by the acarus, but it must not be forgotten that if only one of these escapes (and I am convinced that many more than this must do so), and if only one acarus is left behind under the skin, eggs will be produced at the rate of 2 or 3 a day for 14 days. The acarus may lay as many as 50 eggs. These take 14 days to hatch, so that it would take about six weeks before the last eggs are hatched. This surely is the cause of so many recurrences after so-called immediate cures.

My contention is that every case treated should be examined weekly for at least six weeks before one can affirm that a cure has been effected, and yet how seldom is the trouble taken to carry out this routine. In a large hospital, such as a mental hospital, it is practically impossible to eradicate this trouble unless some such routine is adopted.

In support of the findings which Dr. Kingston has recorded I would add that I have found the acarus in a burrow after the patient had had the recognised sulphur bath treatment, followed by daily applications of sulphur ointment for 14 days. I have also found the live acarus in the burrow under the skin of a patient who had had the sulphur bath treatment followed by applications of sulphur ointment twice a week for four weeks, and in many cases after shorter periods of similar treatment. Further, in a wax cell on a slide under a cover-slip I found that the acarus would live for 24 hours immersed in water, 48 hours crawling about over sulphur ointment, and as long as seven days in a cell such as described with nothing else in it.

I am naturally pleased to see that Dr. Kingston has taken the trouble to make somewhat similar investigations and that his results so closely agree with my own. But surely it is time that medical students were taught that the sulphur bath and ointment, as described in most text-books, is not a cure, and that repeated trials and examinations must be made to prevent the relapse and further spread of this condition, which once left unrecognised and improperly dealt with becomes a source of untold trouble in any large institution.

I am, Sir, yours faithfully,

R. EAGER,

Oct. 15th. Medical Superintendent, The Hospital, Exminster.

GERMICIDAL PROPERTIES OF MERCURY PREPARATIONS

To the Editor of THE LANCET

SIR,—In the annotation entitled Skin Disinfection in your last issue (p. 838) you refer to the well-known fact that the germicidal properties of mercury preparations as determined by different methods vary

enormously. We think that the following simple experiments throw a great deal of light on the causes of the discrepancies.

When the carbolic-acid coefficient of mercury preparations is determined, a loopful of the bacterial culture, after contact with a known concentration of the mercury compound, is removed after a known interval of time, and is subcultured into a given quantity of nutrient broth. If no growth subsequently occurs in this broth it has been assumed that the bacteria in the treated culture were killed when the loopful was removed. Usually this assumption is correct, but in the case of mercury preparations the assumption is purely fallacious. The refusal to develop is due to the bacteriostatic action of the accompanying mercury salt carried over with the loopful into the broth. If instead of plain nutrient broth, broth containing 0.2 c.cm. of a sterile 5 per cent. solution of sodium sulphide per 5 c.cm. of broth is employed, an entirely different picture of the facts is obtained. The sulphide inactivates the mercury which is carried over, and the supposedly dead germs are found to be alive and unharmed. The differences between the real and the apparent germicidal properties of a few mercury preparations are seen in the following Table:—

Mercury preparation.	Real carbolic-acid coefficient.	Apparent carbolic coefficient.
Mercuric chloride ..	0.15	800
Mercuric cyanide ..	Less than 0.1	25
Mercuric iodide ..	7	1300

N.B.—The mercuric chloride in the strong solutions that were necessary was dissolved with the help of sodium chloride and the mercuric iodide with the help of potassium iodide. The actual coefficient of mercuric cyanide could not be determined because a 10 per cent. solution (which is actually a supersaturated solution at 18° C.) failed to kill the bacteria after 10 minutes' contact.

We think we can now give a reasonable explanation of the germicidal failures of mercury preparations under clinical conditions. For instance, the Departmental Committee of Maternal Mortality and Morbidity in their final report (1932, p. 113) showed that a 1 in 1000 solution of mercury perchloride did not kill hæmolytic streptococci on the hands nor did it prevent reinfection after a time. From the above table it will be seen that mercury perchloride is actually a much weaker germicide than pure carbolic acid, and a 1 in 1000 solution is a very feeble one bactericidally. When such a solution is applied to the skin, the mercury compound tends to combine slowly with the excretions of the sweat glands to form insoluble compounds, and as the bacteria have not been killed they can subsequently be removed in the living condition. It is only when some soluble uncombined mercury compound is removed with the bacteria that fictitious results are obtained.

The germicidal ineffectiveness of soluble mercury compounds in the presence of pus and blood is too well known to require special comment.

We are, Sir, yours faithfully,

W. C. REYNOLDS,
S. N. H. STOTHART.

Hull, Oct. 15th.

PARIS

(FROM OUR OWN CORRESPONDENT)

THE SURGICAL CONGRESS

THE Association Française de Chirurgie held its forty-fourth congress in Paris from Oct. 7th to 12th, these dates being chosen so that it might coincide with the motor show.

In his opening address, Prof. Gaston Michel, of Nancy, courageously faced the dangers threatening the medical profession at the present time, as much from within as from without. He pleaded for scientific probity, and a critical attitude towards "too beautiful statistics" and towards those who

sacrifice truth for the sake of innovation. He rang the changes on a Pauline aphorism by declaring that intelligence, sang-froid, and skill profit nothing without rectitude: "for a surgeon, one of the surest and most durable elements of success is scrupulous honesty and unflinching morality, both from the surgical and the scientific points of view. Without conscience, science is but the ruin of the soul." Another danger, he said, with which surgery is faced to-day is standardisation. During the war teamwork was necessary, and personalities sometimes had to be sacrificed. But the reign of the team can continue only if it permits of the development of the individual; otherwise, personal responsibility, the factor of greatest importance, will decline. Excessive collectivism will cultivate the spirit of the functionary and will destroy the surgeon's initiative.

Turning to more concrete problems, Prof. Michel referred in no uncertain terms to the surgeons who refuse to operate, even in an emergency, without having been paid their fees, or who undertake unnecessary operations. Surgery is becoming more and more democratised; every year the supply of surgeons increasingly exceeds the demand, and quantity is obtained at the cost of quality. The younger generation is in a hurry, whereas surgery requires "an aristocracy of soul," and an education which includes moral as well as intellectual elements. "The phantom of wealth, to be acquired quickly and no matter how, induces many to neglect education in a moral sense. The moral crisis existing in the medical profession to-day is not so much to be traced to individuals as to the milieu of the moment." Prof. Michel would have his ideal surgeon serve a long and hard apprenticeship in biology, physiology, and experimental surgery as well as in anatomy. "One's memory of anatomy is the first factor in the calm, the sang-froid, the confidence, the regularity, and the precise and perfect execution of the surgical act." But this is not all. A classical education is essential to the development of a mature and critical judgment; and it gives great suppleness to the mind.

In Prof. Michel's opinion, vigilance on the part of the medical profession is required at the present time in connexion with the appointment of surgeons to hospitals in small and provincial communities. In university towns such appointments are made under equitable conditions. But in communities of less importance politics are apt to intrude, and laymen are tempted to impose their opinions and personal inclinations on the community so that it does not always get the best qualified applicant for a hospital appointment. It should always be made after an open competition at which the judges should be surgeons, not lay politicians.

Apart from numberless minor communications, there were three subjects to which the congress paid special attention. The first was infarct of the mesentery on which an opening paper (or rather monograph) was communicated by Dr. André Ameline, of Paris, and Dr. Charles Lefebvre, of Toulouse. They find that the condition is probably commoner than has been thought, and that there is no one pathognomonic sign of it. The most important symptom is pain associated with collapse. The second main subject was fracture of the calcaneus, and the principal speakers were Dr. Fernand Paitre and Dr. Marcel Boppe, both of Paris. The invitation of Dr. L. Böhler, of Vienna, by the organisers of the congress to speak on this subject was a happy inspiration; and much of the opening paper was an advocacy of Böhler's operation for this fracture. In fact,

Dr. Paitre and Dr. Boppe have come to the conclusion that when a fracture of the calcaneus is articular, and the state of the skin about the tenth day after the accident contra-indicates any incision, Böhler's method of orthopædic reduction should be preferred to any open operative procedure. Böhler's method requires great technical precision and most strict post-operative supervision. Whatever be the treatment given, no final result of articular fractures can be expected in much less than a year.

The third main subject was the technique and physiological consequences of operations on the diaphragm, phrenicectomy excepted. The main report was presented by Dr. Henri Costantini, of Algiers, and Dr. G. Ménégaux, of Paris. Among the distinguished foreigners invited to speak on this subject were Prof. Sauerbruch, of Berlin, and Dr. Harrington, of Rochester, U.S.A.

IRELAND

(FROM OUR OWN CORRESPONDENT)

PUBLIC HEALTH ADMINISTRATION IN DUBLIN

SOME weeks ago the Minister for Local Government and Public Health appointed a tribunal to investigate the question of enlarging the boundaries of the City of Dublin and also the financial relations between the several local authorities in the county of Dublin. The chairman of the tribunal is a distinguished lawyer and his two colleagues are officials in the Minister's Department, one an engineer and the other an expert in accountancy. No member of the tribunal has any medical experience or any qualification for forming an opinion on the many matters concerning public health administration with which the tribunal will have to deal. The council of the Irish Medical Association drew the attention of the Minister to this weakness in the tribunal and asked him to add to its personnel one medical member. The council pointed out that the decisions to be made by the tribunal will affect the administration of public health for many years to come, not only as regards the boundaries of administrative areas, but as regards such special questions as the provision and maintenance of an adequate hospital service, water-supply, housing, and town-planning. While the council did not question the capacity of the several members of the tribunal in their own spheres, none of them had the training or experience to fit them to form a useful opinion on such topics. To this suggestion the Minister has found himself unable to accede. There is no doubt that the report of the tribunal will suffer from absence of a member who could give sufficient weight to considerations of public health.

The most interesting evidence yet submitted to the tribunal has been that of Mr. M. Russell, F.R.C.S.I., superintendent medical officer of health for the city of Dublin, who made a clear statement of the present public administration and of the problems which have to be solved in Dublin. He stated that the Census of 1926 showed that there were 25,789 families living in one-room tenements in Dublin, of which 14,725 were of three persons or upwards. There are 2000 cellars in the city occupied as dwellings. The housing problem was most urgent and should be dealt with as rapidly as possible. To meet the needs of the population 2000 houses would have to be built each year, and at present not more than 1000 a year were being built. There is difficulty in finding suitable housing accommodation for those

turned out of insanitary dwellings. These mostly were poor people who could not afford to pay rent. In future fever cases would be treated in one large hospital which would be under the joint control of representatives of the present board of Cork-street Fever Hospital, the corporation of Dublin, and the Dublin county council. It would be built from funds supplied from the Hospitals' Sweepstakes. The maternity services of Dublin are, Mr. Russell says, very satisfactory: for some years there has been no instance of a midwifery case being attended by an untrained or unqualified person. The hospitals in the city were maintained on a voluntary basis, the corporation making annual contributions amounting in all to £6072 a year. Payments were also made to certain hospitals for services in connexion with child welfare, the school medical service, tuberculosis, and venereal disease. The corporation was represented on the management of all the voluntary hospitals in receipt of grants except in two cases. The voluntary system, each hospital being its own master, had worked well, and he never found any difficulty in getting a poor patient into hospital. The relation between the corporation and the hospitals was most friendly and no difficulty ever arose. He did not see any need for a municipal hospital or for reserving a certain number of beds in each hospital. The health of the city was improving, particularly as regards tuberculosis, and infant mortality was diminishing.

There was a public abattoir in Dublin, but there were still 64 private slaughter-houses. Licences were not renewed for these latter on the death of a licensee, as it was very desirable to abolish all slaughter-houses. The total Government grants to the public health department of the city amounted to £31,258, of which £10,336 was for tuberculosis, £4371 for school meals, £7232 for maternity and child welfare work, and £4225 in respect of the treatment of venereal disease.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Capt. A. T. Rivers placed on the Ret. List.
Surg. Comdr. M. Brown to *President* for Medical Dept., temp.

Surg. Comdr. W. H. Murray to *Drake* for R.N. Hospl., Plymouth.

Surg. Lt.-Comdrs. R. R. Baker to *Victory* for R.M. Infirmary, Portsmouth, and C. Keating to *St. Angelo* for R.N. Hospl., Malta.

Surg. Lt. J. W. Oliver to *Pembroke* for R.M. Infirmary, Chatham.

ARMY MEDICAL SERVICES

Maj.-Gen. (Supern.) P. H. Henderson, C.B., D.S.O., late R.A.M.C., K.H.P., and Maj.-Gen. J. F. Martin, C.B., C.M.G., C.B.E., late R.A.M.C., K.H.S., retire on ret. pay.
Col. G. A. D. Harvey, C.M.G., late R.A.M.C., to be Maj.-Gen.

Lt.-Cols. to be Cols.: G. F. Dawson, M.C., from R.A.M.C., and A. C. Hammond Searle, M.C., from R.A.M.C.

The undermentioned relinquish their appts.: Maj.-Gen. P. H. Henderson, C.B., as Dir. of Hygiene, War Office, and Col. A. C. Hammond Searle, M.C., as Asst. Dir. of Hygiene, War Office.

The undermentioned appts. are made: Col. H. H. A. Emerson, D.S.O., late R.A.M.C., to be Dir. of Hygiene, War Office, and Lt.-Col. D. T. Richardson, M.C., R.A.M.C., to be Asst. Dir. of Hygiene, War Office.

ROYAL ARMY MEDICAL CORPS

Majs. to be Lt.-Cols.: H. G. Winter, M.C., and N. Cantlie, M.C.

ROYAL AIR FORCE

Wing Comdr. P. H. Young to No. 11 Flying Training School, Wittering, for duty as Senior Medical Officer.

Squadron Leader C. J. S. O'Malley to Princess Mary's R.A.F. Hospital, Halton, for duty as Medical Officer.

Flight Lts. F. B. C. L. B. Crawford and N. I. Smith are promoted to the rank of Squadron Leader.

Flying Offrs. H. F. Harvey, J. C. Blair, and A. W. Callaghan are promoted to the rank of Flight Lt.

Flight Lt. G. S. Strachan to Central Medical Establishment, London.

DEATHS IN THE SERVICES

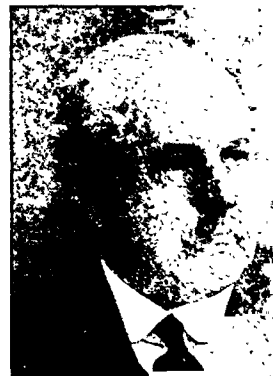
Lieut.-Colonel WILLIAM JAMES NIBLOCK, who died on Oct. 10th at Bournemouth, was born in July, 1871, qualified M.B.R.U.I. in 1894, and became F.R.C.S.I. in 1906. He took his first commission in the Indian Medical Service in January, 1896, became major in July, 1907, and rose to be first surgeon and superintendent of the General Hospital, Madras, and principal and professor of surgery in the Medical College, Madras, in 1912. He retired in February, 1923. He was an hon. associate of the Order of St. John of Jerusalem in England.

OBITUARY

SIR FREDERIC CONWAY DWYER, M.D. Dub.

PAST PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND

Sir Conway Dwyer, who died in Dublin on Oct. 10th, had been in failing health for some time, and had retired from active practice about two years ago. Born in Dublin in 1860, Dwyer received his medical education at Trinity College, Dublin, where he graduated in medicine and surgery in 1883. Within a few years of qualification he was appointed one of the surgeons to Jervis-street Hospital, whence he emigrated some years later to the Meath Hospital, and in 1907 he was appointed surgeon to the Richmond Hospital. In recent years he was chairman of the board of governors of the last-mentioned institution. In 1898 he became a fellow of the Royal College of Surgeons in Ireland, of which he subsequently was vice-president, president, and honorary secretary; he was also



[Photograph by Lafayette

SIR CONWAY DWYER

for some years professor of surgery in its school. During the war Dwyer was operating surgeon at King George V. Hospital in Dublin with the rank of lieutenant-colonel, and he was knighted in 1921. He was inspector of anatomy for Ireland, and also visiting inspector in lunacy; and he took much interest in the Peamount Hospital for Consumption, where he became honorary treasurer and chairman.

For the greater part of a long professional life Sir Conway enjoyed a large consulting and operating practice. His interests in surgery were not limited to one field, and he was an admirable general hospital surgeon. Gifted with abundant common sense and sound judgment, he was painstaking and careful in his work, and was liked both by patients and colleagues for his geniality and kindness. He was unmarried.

PANEL AND CONTRACT PRACTICE

Dangerous Drugs

At the annual conference of the National Association of Clerks to Insurance Committees a discussion on some of the difficult points of medical benefit was initiated by the clerk of the London committee. One is the position of a practitioner who, having been deprived of his authority to possess, to supply, or to prescribe dangerous drugs, applies for admission to the medical list. The practitioner (still a registered practitioner) would have a right to have his name included in the medical list in exactly the same way as any other doctor, but the committee would require him to make an arrangement with another practitioner to deputise for him in any case in which the use of one of the scheduled drugs was necessary. But this would depend on the willingness of another practitioner to work with him.

Conflicting Tribunals

Another matter for discussion emerged from a case which recently arose in which a complaint was made in respect of treatment provided for a deceased insured person, and at the same time an action was started by the father of the deceased girl for the recovery of damages from the practitioner. The medical service subcommittee decided that the case was one of which they could not dispose without a hearing. The solicitors for the complainant and those for the respondent then requested that the hearing should be deferred pending the result of the proceedings in the courts, which were not likely to be heard for several months. The medical service subcommittee proposed to defer the hearing pending the result of the action but asked advice from the Ministry of Health. The Ministry stated that they were unable to give advice on the general question raised by the committee, but added that they saw no objection to the postponement of the investigation by the subcommittee pending the result of the other proceedings. The doctor then applied for leave of absence from his practice for a lengthy period, but as the committee were not satisfied that the absence would be due to a reasonable cause they refused. The doctor then gave three months' notice of his desire to withdraw from the medical list, which he had a perfect right to do. It became clear, in view of the time which must elapse before the case could be reached in the courts, that unless the hearing preceded the action in the courts the doctor would no longer be an insurance practitioner by the time the subcommittee could hear the case, and consequently if he were found to be culpable the committee would be placed in a position of considerable embarrassment. Fortunately perhaps, after much correspondence, the complaint to the committee was withdrawn, neither party being desirous apparently of running the risk of the legal action being prejudiced by the result of the medical service inquiry.

A Complaint that Failed

Article 33 (1) of the Medical Benefit Regulations gives power to a medical service subcommittee, if they think fit, to permit any person concerned in an investigation to be assisted in the presentation of his case by some other person, but no person is entitled to appear in the capacity of counsel, solicitor, or

other paid advocate. This permissive power to admit a "friend" must not be confused with the right of the secretary or other officer of the society or branch of which the insured person may be a member, and the secretary or other officer of the panel committee to be present, a right which so far as the panel committee officer is concerned is usually exercised. The Manchester medical service subcommittee recently heard a case in which the complainant, the mother of a deceased insured person, was assisted in the presentation of her case by a clergyman who was also a witness on her behalf.

The question arising was a comprehensive one covering alleged irregular and insufficient attention, the issue of certificates without seeing the patient, delay in recommending hospital treatment, and a complaint as to the circumstances under which the patient was sent to hospital during the night on which he died. The patient had a valvular heart lesion and following an attack of influenza a subacute malignant endocarditis developed; he was also anæmic. The first two points were not substantiated. With regard to the hospital treatment a specialist was called in—the patient's employers having assumed responsibility for the cost—and he advised hospital treatment to which both the patient and his mother were at first averse, but on the following day they changed their minds and informed the doctor, who immediately notified the specialist and asked him to arrange for admission as soon as possible. Admittedly delay did then occur, but as the arrangements for the admission of the patient to the hospital rested upon the consultant the respondent doctor could not be blamed, nor was it within the province of the committee to investigate the circumstances of the delay.

Meanwhile the doctor had continued to treat the patient and visited him on the afternoon of March 20th, 1935. During the night of March 21st–22nd the mother went to the doctor two or three times between 12.30 and 2.30 A.M., and it is agreed that she saw him twice. On the first occasion the doctor handed her a tablet of digitalin and strychnine which she was to administer to the patient and to let the doctor know if he did not improve. On the second occasion the doctor—who had been clearing up his work in preparation for a journey to Scotland to attend the funeral of his mother on the following day—was in his bath and to save disturbing the household answered the door himself clad only in a bath towel. He was told that the patient was no better and then decided that the only hope was to take the risk of securing the boy's immediate admission to hospital. It would have taken him some 25 minutes to dress and get to the patient and he therefore telephoned for an ambulance which arrived at the patient's house within five minutes and transported the boy to the hospital where he died before admission to a ward.

From the evidence of the doctor and of the specialist there was no hope of the patient's recovery, but it was thought that treatment in hospital might have prolonged his life. The subcommittee found that the charges of neglect had not been established, but they observed that in the light of after knowledge of the events they believed that a visit to the patient during the last night would have been the better course but they were satisfied, in the circumstances with which the doctor was faced at the time, that he took the action which he believed was in the best interests of the patient and relatives.

MEDICAL NEWS

Royal College of Surgeons of England

A quarterly meeting of the council was held on Oct. 10th with Sir Cuthbert Wallace, the president, in the chair. Dr. William Bradley Coley, of New York, was admitted an honorary fellow of the college and Mr. Joseph Jacobs, of Lewis's School, Pengam, was admitted as the sixth Macloghlin scholar. It was reported that at the promotion examination for 1935 the Sir Gilbert Blane gold medals had been awarded to Surgeon Lieutenant-Commander A. A. Pomfret and Surgeon Lieutenant-Commander W. G. C. Fitzpatrick.

Diplomas of membership were granted to the following candidates:—

T. D. Chablani, Bombay St. Geo.; B. P. Datta, Calcutta and Lond.; E. W. Knowles, Liverp.; and Phyllis J. M. Sykes, Univ. Coll.

Diplomas in anaesthetics were granted jointly with the Royal College of Physicians to the following:—

G. F. V. Anson, Herbert Charles, L. T. Clarke, Elsie C. Hanson, O. J. Murphy, and J. D. Stewart.

A series of demonstrations of specimens in the museum will be opened on Monday, Oct. 21st, when Dr. A. J. E. Cave will speak on the anatomy of the faucial tonsil. The second lecture will be given on Oct. 25th by Mr. C. P. G. Wakeley, on tumours of the brain and spinal cord. On Oct. 28th and Nov. 4th Dr. L. W. Proger will describe some diseases of bone, and on Nov. 1st and 8th Dr. Cave will deal with the anatomy and physiology of the human larynx. The lectures will be held at 5 p.m. at the College, Lincoln's Inn Fields, London, W.C., and are open to medical practitioners and advanced students.

University of London

The next award of the Rogers prize of £100, which is offered from time to time by the senate for the best essay on a medical or surgical subject, will be made in 1936. The subject chosen is the natural history of peptic ulcers. Further information will be found in our advertisement columns.

University of Dublin

At recent examinations at the School of Physic, Trinity College, the following candidates were successful:—

FINAL EXAMINATION FOR M.B., B.CH.

Part I. (*Pathology, Therapeutics, &c.*).—W. T. Kenny, Mandel Friedman, M. C. Brough, J. H. Mitchell, J. E. Gillespie, F. C. Heatley, Robert Pollock, J. C. Lambkin, P. G. Patton, Jasmine Taylor, O. M. Harrison, G. K. Donald, Grace M. Wild, R. J. Sandys, D. B. George, Patricia M. J. Conway, and J. N. G. Drury.

University of Wales

In a recent examination for Part II. of the diploma in public health the following candidates were successful:—

Robert Cameron, T. C. R. George, Joan E. Greener (with distinction), D. J. Jones, G. R. Jones, and J. M. Thomas.

University of Sheffield

On Oct. 11th H. A. Krebs, M.A. Camb., M.D. Hamburg, was appointed lecturer in pharmacology in the university. The title of emeritus professor was conferred on Dr. C. J. Patten, late professor of anatomy, and Mr. Miles Phillips, late professor of obstetrics and gynaecology.

The late Dr. John Stokes, of Sheffield, who died on June 5th, left property to the value of over £20,000. After a few small bequests, including £100 to the Children's Hospital, Sheffield, he left the residue of the property to the University. He expressed the wish that the legacy would be used to establish a fellowship in any subject tending to advance the science of medicine and alleviate the sum total of human suffering.

Royce Research Fellowships

The late Sir Henry Royce instructed that a tenth of his fortune should be used to promote medical research, and the money has been used for the establishment of two fellowships, each of £500 a year, for investigation of influenza and the common cold. One of the fellowships is held by Dr. C. H. S. Harris at the British Postgraduate Medical School, Hammersmith, and the second has now been awarded to Dr. Leslie Hoyle, demonstrator in pathology and bacteriology at Leeds Medical School. Dr. Hoyle will work at the University of Manchester. The fellowships are tenable for three years, and the holders will collaborate in their inquiries.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty held on Oct. 7th Gilbert Forbes, M.B. (Glasgow), and Hugh Gordon Neill, M.B. (Glasgow), were admitted to the fellowship.

St. John Clinic and Institute of Physical Medicine

A post-graduate course on practical methods of physical medicine will be held at the clinic, Ranelagh-road, London, S.W., on alternate Fridays, at 4.30 p.m., from Nov. 1st to March 20th. Sir Leonard Hill, F.R.S., will give the first lecture and will speak on the action of ultra-violet, visible, and infra-red rays.

Semon Lecture

This annual lecture will be delivered at the house of the Royal Society of Medicine, 1, Wimpole-street, W., at 5 p.m., on Thursday, Oct. 31st, by Sir StClair Thomson, who has chosen for his subject the Defences of the Air-passages. The lecture is given under the auspices of the University of London, and the chair will be taken by Mr. H. L. Eason, the Vice-Chancellor.

Chadwick Trust

Sir William Collins will preside at a lecture arranged by this Trust to be given by Captain R. St. Barbe Baker, founder of the Men of the Trees, in the hall of the Royal Geographical Society, Exhibition-road, Kensington Gore, on Wednesday, Oct. 23rd, at 8.15 p.m. He will speak on the contribution of trees to national health and efficiency.

Royal Dental Hospital of London

School of Dental Surgery.—The twenty-sixth annual At Home of this school will be held on Saturday, Nov. 23rd. The morning, from 9.30 a.m. to 12.30 p.m., will be devoted to demonstrations at the in-patient department of Charing Cross Hospital and in the various departments of the Royal Dental Hospital, where there will also be an exhibition of clinical cases, photographs, and drawings in the afternoon.

Royal Institution

The afternoon lecture courses at the Royal Institution this winter include a survey of modern views on nutrition by Prof. Edward Mellanby, F.R.S., secretary of the Medical Research Council, to be given at 5.15 p.m. on Tuesdays, Nov. 26th, Dec. 3rd, 10th, and 17th. The Christmas course of six lectures for children will be given by Mr. C. E. K. Mees, D.Sc., director of research at the Eastman Kodak Company, on photography. The address of the institution is 21, Albemarle-street, London, W. 1.

Prize for Research in Rheumatism

The Russian Government, after consultation with the Ligue Internationale contre le Rhumatisme, has offered two prizes, each of 1000 gold roubles (about £180), for investigations carried out during the last ten years on clinical, scientific, or social aspects of rheumatism. Papers may be written in either English, German, or French, and four copies should be sent to the secretary of the league, Dr. J. van Breemen, Keizersgracht 489, Amsterdam, before Nov. 15th.

Lectures for Parents

A special autumn course for parents has been arranged by the Institute of Medical Psychology, and will be held at the clinic in Malet-place, London, W.C., on Tuesdays, at 6 p.m., from Oct. 22nd to Dec. 10th. The course will be in charge of Dr. Emanuel Miller and will cover such questions as the conflict of parents' temperaments, the sex education of children, and the general management of adolescence.

Midwives' Institute

Lady Forber (Dr. Janet Lane-Claypon) will deliver the Fynes-Clinton memorial lecture at this institute, 57, Lower Belgrave-street, London, S.W., at 5.30 p.m. on Oct. 24th. She will make a preliminary report on the present conditions of midwifery practice, based on a questionnaire issued by the institute to 8000 independent midwives in England and Wales. Lady Williams will preside. Free tickets will be available at the institute.

Dr. J. A. Ryle, regius professor of physic in the University of Cambridge, and Dr. Matthew Stewart, professor of pathology in the University of Leeds, have been appointed members of the Medical Research Council in succession to Lord Dawson of Penn and Prof. A. E. Boycott, F.R.S.

Whitworth Hospital, Darley Dale

There is a deficit of £3633 on this hospital, the loss on last year's working being £349, as against £385 in the previous year. Road accidents involve the hospital in a great deal of expense, and it has been necessary to spend money on bringing the operating theatre up to date.

Smallwood Hospital, Redditch

An appeal to raise £30,000 for extensions to this institution is to be launched. Twenty additional beds are required and improvements are needed in the X ray, massage, and out-patients' departments.

Essex County Hospital, Colchester

An extension scheme costing £40,000 is contemplated at this hospital to meet the future requirements of the large area which it serves. The contributory scheme showed an increase last year of over £400 in the country districts and amounted in all to £6197. The collection of £5833 from the workers of the borough of Colchester brought the total sum raised to over £12,000.

Bureau of Hygiene and Tropical Diseases

Dr. Harold Scott has now taken up his duties as director of this bureau in succession to Sir Arthur Bagshawe.

Educated at the Mercers' and City of London Schools, Dr. Scott received his medical training at St. Bartholomew's and St. Thomas's Hospitals and at University College, subsequently going on to Copenhagen. Qualifying with the Conjoint Board in 1897, he was house physician at St. Thomas's before serving in the South African war as a captain in the R.A.M.C. In 1900 he took the M.B. Lond. and was appointed Government bacteriologist in Jamaica, taking a similar position later at Hong-Kong. During the late war he was pathologist at the Cambridge Hospital, Aldershot, in charge of mobile laboratory No. 13. In 1930 he was appointed assistant director of the Bureau of Hygiene and Tropical Diseases, having previously been on the staff of the London School of Hygiene and Tropical Medicine as Milner research fellow in comparative pathology, holding at the same time the post of pathologist to the Zoological Society of London. He also lectured on tropical disease at the Westminster Hospital medical school, examined in tropical medicine and surgery for the Conjoint Board, and acted as medical secretary of the Colonial Medical Research Committee. He collaborated with the late Sir Andrew Balfour in a survey entitled *Health Problems of the Empire—Past, Present, and Future*, and in 1930 his important review of tuberculosis in man and lower animals was published as a special report (No. 149) by the Medical Research Council. He has contributed frequently to the *Annals of Tropical Medicine and Parasitology*, and is the author of a recent work entitled "Notable Epidemics." He was elected F.R.C.P. Lond. in 1925, and is a fellow of the Royal Society of Edinburgh.

Medical Missionaries in Abyssinia

There is some doubt whether the evacuation of Addis Ababa by British subjects will apply to the missionaries working there. It is stated that all the representatives of the Missionary Society, numbering about fifteen, have had at least a short medical training, and have all offered for Red Cross work. We are informed that Mr. and Mrs. Colin Mackenzie have been in charge for some time of the Swedish Hospital at Harar, while Dr. and Mrs. Kenneth Buxton were due at Jibuti on Monday last and are taking medical equipment to Harar. Dr. Lionel Gurney is at the hospital at Asba Tafari; while Dr. Ted Gurney, his brother, and Mrs. Gurney are preparing to leave England for Abyssinia as soon as possible. The Sudan Interior Mission, which sent three new missionaries to Abyssinia last week, also hopes that its British missionaries will be allowed to remain. Dr. T. A. Lambie, formerly an American, who is in charge of the Mission's work in Abyssinia, is a naturalised Abyssinian and will not be affected by the order. But there are also about 25 British missionaries, mostly Canadian, Australian, and New Zealand, with the Mission, besides nearly 40 Americans. Some of them, including Dr. E. R. Hooper, the Canadian in charge of the leprosarium at Addis Ababa, are medically qualified, and there are at least six qualified nurses. Most of the rest, if not all, have taken a medical course in their missionary training, and will be able to offer for Red Cross work.

Films for Nurses

For the first time in Liverpool a film has been shown in a training class for nurses. The film was sponsored by the Merseyside Film Society and was shown at Walton Hospital.

Coventry and Warwickshire Hospital

The board of management hope to begin the extensions to this hospital some time after Easter. The fund now stands at £95,000, but £120,000 will probably be required.

Lady Chichester Hospital, Hove

On Oct. 1st the Bishop of Chichester dedicated to the memory of Bishop Russell Wakefield a new consulting-room for the medical staff of this hospital. He also dedicated a new wing which has been built by the trustees of the John Howard bequest.

New Hospital for Wakefield

The Mayor of Wakefield has opened a new municipal maternity hospital, child welfare centre, and antenatal clinic at Manygates Park, Wakefield. The hospital has accommodation for 35 patients, and was built at a cost of £27,000.

Society for Relief of Widows and Orphans of Medical Men

At a meeting of the court of directors, held on Oct. 9th, Mr. V. Warren Low being in the chair, seven new members were elected. A grant of £52 10s. a year for five years was made to a widow to enable her daughter to study medicine; the daughter had already passed her preliminary medical examination. A sum of £645 was voted as a Christmas present, to be distributed as follows: widows over 75 to receive £15 each, under 75 each £10, orphans £10 each. A widow who had died since the last meeting of the court came on the funds in 1919 and had received in grants £1155. Membership in the society is open to any registered medical man, who at the time of his election is residing within a twenty-mile radius of Charing Cross. Full particulars from the secretary, 11, Chandos-street, London, W. 1.

Chelsea Clinical Society

Mr. H. Paxton Baylis, the president, took the chair at the annual dinner of this society held at the Rembrandt Hotel on Tuesday last. Field-Marshal Lord Milne, who proposed the health of the Society, remarked that in the absence of any direct information he had consulted the dictionary for the meaning of a clinical society. Combining the information given under the two words, he had decided that it was a number of persons associated by a common interest confined to bed through sickness. The evening which he had spent had not, however, borne out this expectation. During the war he had come into close contact with the medical profession, and without its aid he would not have been there that evening. As chairman of a physical training institute in the East End, he urged the profession to induce the parents of the country to take more interest in the physical education of their children. As an active soldier, he had found a lamentable physique among the upper classes. Physical training was much more important than games. The President, in his reply, reported that the membership of the society and the attendance at its meetings had increased. In 1897 it had numbered 17 members, who had met in a dispensary in Chelsea under the presidency of Dr. Foster Palmer. Its members were now 230, and it met in an atmosphere of camaraderie and good fellowship. Just as in the past a physician had given medicine in some palatable disguise, so the society administered a basis of good food and wine before the discussion of its medical problems. Dr. Desmond MacManus, proposing the health of the guests, spoke of Lord Milne's drive and energy as chairman of the Cancer Hospital. Mr. H. L. Eason, in reply, declared that of all the faculties of the University of London the most distinguished was that of medicine; it was unparalleled throughout the Empire for wealth of clinical material, hospitals, and societies, and it provided between 40 and 50 per cent. of the whole medical profession of England, Scotland, and Wales. Dr. Bernard Myers, who also replied, spoke of the incalculable value of medical societies.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Oct. 22nd.

Medicine. 5 P.M. Dr. Arnold Stott and Dr. D. Evan Bedford: The Recognition of Myocardial Disease. Dr. A. G. Gibson will also speak.

WEDNESDAY.

Comparative Medicine. 5 P.M. Prof. J. C. G. Ledingham, F.R.S.: The Comparative Study of Clinically Allied Viruses: Some Unsolved Problems of Edward Jenner (presidential address).

THURSDAY.

Urology. 8.30 P.M. Mr. R. Ogier Ward: Some Remarks on Vesical Diverticula (presidential address).

FRIDAY.

Disease in Children. 5 P.M. (Cases at 4.30 P.M.) Dr. E. A. Cockayne: 1. Arachnodactylia with Congenital Heart Disease († Intraventricular Septum). Dr. R. Cove-Smith and Dr. Alan Moncrieff: 2. Defective Saliva and Digestive Disturbance. Dr. E. Fletcher and Mr. Holmes Sellers: 3. Lobectomy for Bronchiectasia. Dr. A. M. Stewart-Wallace (for Dr. R. A. Rowlands): 4. A Probable Case of Pick's Disease. 5. Case for Diagnosis. 1 Cerebral Degeneration.

Epidemiology and State Medicine. 8.15 P.M. Surgeon Captain S. F. Dudley: On the Biological Approach to the Study of Epidemiology (presidential address).

Physical Medicine. 8.30 P.M. Dr. C. B. Heald: Electrotherapy 1910-35, including Experiments in the Induction of Artificial Fever (presidential address).

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.

MONDAY, Oct. 21st.—8 P.M. Annual General Meeting. 8.30 P.M., Prof. G. E. Gask: Changing Surgery (presidential address).

MEDICO-LEGAL SOCIETY.

THURSDAY, Oct. 24th.—8.30 P.M. (Manson House, 26, Portland-place, W.). Mr. O. A. Mitchell, D.Sc.: Forensic Chemistry in relation to Medicine (presidential address).

EUGENICS SOCIETY.

TUESDAY, Oct. 22nd.—5.15 P.M. (rooms of the Linnean Society, Burlington House, Piccadilly, W.). Mr. Herbert Brewer: Euteleogenesis—Objections and Criticisms Considered.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY, 49, Leicester-square W.C.

WEDNESDAY, Oct. 23rd.—4.30 P.M., Clinical Cases.

BRITISH ORTHOPÆDIC ASSOCIATION.

FRIDAY, Oct. 25th, and SATURDAY.—Annual meeting at Manchester.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Oct. 21st.—5 P.M., Dr. A. J. E. Cave: The Anatomy of the Fauical Tonsil.

FRIDAY.—5 P.M., Mr. C. P. G. Wakeley: Tumours of the Brain and Spine.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 21st, to SATURDAY, Oct. 26th.—INFANTS HOSPITAL, Vincent-square, S.W. Mon., Wed., and Fri., 8 P.M., course for the F.R.C.S. Primary (Anatomy and Physiology).—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. All-day course in gynecology.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. All-day course in neurology.—ST. JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, Ranelagh-road, S.W. Sat. and Sun., course in physical medicine.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W. Thurs., 4 P.M., Mr. Albert Davis: Neurosurgery in the Relief of Gynecological Pain.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Tues., 8.30 P.M., Dr. R. D. Lawrence: Pancreas. Thurs., 8.30 P.M., Dr. S. Lett Simpson: Adrenal. Courses and lectures arranged by the Fellowship are open only to members and associates.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.

THURSDAY, Oct. 24th.—3 P.M., Dr. Russell Brain: Demonstrations.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.

WEDNESDAY, Oct. 23rd.—4 P.M., Dr. Saxby Willis: Thoracic Pain.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 23rd.—4.30 P.M., Mr. W. K. Irwin: Some Important Prostatic Diseases.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Oct. 24th.—2 P.M., Mr. T. Twistington Higgins: Some Points in Genito-urinary Surgery. 3 P.M., Dr. A. Signy: Specific Immunisation (III). Out-patient clinics daily at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Oct. 21st.—3.30 P.M., Dr. Kinnier Wilson: Organic Dementia (I).

TUESDAY.—3.30 P.M., Dr. Purdon Martin: The Cranial Nerves (III).

WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. Riddoch: The Sensory System (III).

FRIDAY.—3.30 P.M., Dr. Bernard Hart: The Psychoneuroses (III).

Out-patient clinic daily at 2 P.M.

WEST LONDON POST-GRADUATE COLLEGE, W.6.

MONDAY, Oct. 21st.—10 A.M., medical and surgical wards, skin clinic. 2 P.M., gynecological and surgical wards, eye and gynecological clinics. 4.15 P.M., Mr. Green-Armstrong: Errors in Treatment.

TUESDAY.—10 A.M., medical wards and dental clinic, 11 A.M., surgical wards. 2 P.M., throat clinic. 4.15 P.M., Dr. Konstam: The Thyroid and the Heart.

WEDNESDAY.—10 A.M., children's wards and clinic, medical wards. 2 P.M., eye clinic. 4.15 P.M., Dr. Archer: Biochemical Demonstration.

THURSDAY.—10 A.M., neurological and gynecological clinics. Noon, fracture clinic. 2 P.M., eye and genito-urinary clinics. 4 P.M., venereal diseases.

FRIDAY.—10 A.M., skin and dental clinics. Noon, Lecture on Treatment. 2 P.M., throat clinic. 4.15 P.M., Dr. Hugh Gordon: Differential Diagnosis of Common Skin Diseases.

SATURDAY.—10 A.M., surgical and children's clinics, medical wards. The lectures at 4.15 P.M. are open to all medical practitioners without fee. Operations and medical and surgical clinics daily at 2 P.M.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.

TUESDAY, Oct. 22nd.—5 P.M., Dr. J. E. M. Wigley: Tuberculosis Cutis.

THURSDAY.—5 P.M., Dr. H. W. Barber: Psoriasis.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.

THURSDAY, Oct. 24th.—9 P.M., Mr. J. B. Hunter: Surgical Treatment of Pulmonary Tuberculosis.

UNIVERSITY OF LONDON.

TUESDAY, Oct. 22nd.—5 P.M. (University College Hospital Medical School), Prof. Charles Singer: History of Museums and Collections.

TUESDAY, THURSDAY, and FRIDAY.—5.30 P.M. (University College), Prof. Pol Gerard: Comparative Histopathology of the Vertebrate Nephron.

LONDON SCHOOL OF HYGIENE, Keppel-street, W.C.

WEDNESDAY, Oct. 23rd.—4.30 P.M., Prof. R. A. Fisher, F.R.S.: Eugenics and National Health (second lecture).

INSTITUTE OF MEDICAL PSYCHOLOGY, Malet-place, W.C.

TUESDAY, Oct. 22nd.—6 P.M., Dr. Emanuel Miller: Problems of Parenthood (first of a course of eight weekly lectures).

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Oct. 23rd.—3.30 P.M., Dr. A. A. Moncrieff: The Early Weeks of Life in relation to the Health of the Adolescent.

UNIVERSITY OF SHEFFIELD.

FRIDAY, Oct. 25th.—3 P.M. (Royal Infirmary), Mr. J. H. Cobb: Ear, Nose, and Throat Clinic. 3 P.M. (Royal Hospital), Dr. Rupert Hallam: Dermatological Clinic. Mr. E. Gordon Mackie: Ophthalmological Clinic.

SUNDAY.—10.30 A.M. (Royal Hospital), Dr. C. Gray Imrie and Dr. A. Gurney Yates: Medical cases. Mr. Wilfred Hynes: Surgical cases. 10.30 A.M. (Jessop Hospital), Mr. Glyn Davies: Gynecological cases.

UNIVERSITY OF BRISTOL.

TUESDAY, Oct. 22nd.—5.15 P.M., Dr. Macdonald Critchley: Occurrence of Pain (Long Fox lecture).

GENERAL INFIRMARY, Leeds.

TUESDAY, Oct. 22nd.—3.30 P.M., Dr. Vining: Convulsive Disorders of Childhood.

PUBLIC DISPENSARY AND HOSPITAL, Leeds.

WEDNESDAY, Oct. 23rd.—4 P.M., Mr. A. D. Sharp: Ear, Nose, and Throat—selected cases.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Oct. 24th.—4.15 P.M., Dr. R. Ellis: Medical Treatment of Urinary Infections.

ROYAL INFIRMARY, Manchester.

TUESDAY, Oct. 22nd.—4.15 P.M., Dr. Norman Kletz: Functional Disorders of the Digestive System.

FRIDAY.—4.15 P.M., Mr. A. Graham Bryce: Demonstration of surgical cases.

WAR MEMORIAL HOSPITAL, SHOOTER'S HILL.—Extensions to this hospital are urgently needed and an appeal for £40,000 is being made. A nurses' home is required and the maternity ward, which has only eight beds, is inadequate for the needs of the district. Waiting-lists are lengthening, emergency beds have been brought into use, and expenditure is increased by nurses having to sleep in quarters outside the hospital.

Appointments

BARLING, B., M.D., M.R.C.P. Lond., has been appointed Deputy Medical Superintendent, Grade II., at St. Mary Abbots Hospital, L.C.C.
 COHEN, H. M., M.B. Liverp., D.P.H., Senior School Medical Officer for the Assistant Radio-logist at the
 JOHNSTONE, M. B.
 MARSHALL, S. F., M.B. Lond., Assistant Medical Officer and Pathologist at the Old Church Hospital, Romford.
 MORLEY, JOHN, Ch.M. Manch., F.R.C.S. Eng., Hon. Consulting Surgeon to the Manchester Babies' Hospital.
 PLATT, HARRY, M.S. Lond., F.R.C.S. Eng., Hon. Consulting Orthopaedic Surgeon to the Manchester Babies' Hospital, Kingston and District Hospital.—The following appointments are announced:—
 WARNER, E. O., M.D., M.R.C.P. Lond., Visiting Physician; GRIFFITHS, J. IVOR, M.B. Lond., F.R.C.S. Eng., Visiting Aural Surgeon; and
 TODD, A. H., M.S. Lond., F.R.C.S. Eng., Visiting Orthopaedic Surgeon.

Vacancies

For further information refer to the advertisement columns
Abyssinia Ambulance Unit.—Medical Officers.
Ashton-under-Lyne District Infirmary.—Res. Surg. O. At rate of £200.
Bath and Wessex Children's Orthopaedic Hospital, Combe Park.—H.S. At rate of £120.
Birmingham, Erdington House.—Jun. Asst. M.O. At rate of £200.
Bristol Eyc Hospital.—Jun. Res. H.S. £100.
Bristol, Ham Green Hospital and Sanatorium.—Jun. Asst. Res. M.O. £250.
Burton-on-Trent General Infirmary.—H.P. and Cas. O. £150.
Buxton Clinic for Rheumatism and Allied Diseases.—H.P. At rate of £150.
Cairo, Egypt, Giza Memorial Ophthalmic Laboratory.—Asst. Surgeon. L.E.800.
Cambridgeshire C.C.—Asst. County M.O. £600.
Cardiff, King Edward VII. Welsh National Memorial Association.—Asst. Res. M.O. for Glan Ely Tuberculosis Hospital. £200. Also Asst. Res. M.O. for South Wales Sanatorium. £200.
Cardiff Royal Infirmary.—Cas. Surg. O. At rate of £75.
Chesterfield Poor Law Institution and Infirmary.—Res. M.O. £150.
Colonial Medical Service.—Medical Officers.
Doncaster Royal Infirmary.—H.S. At rate of £175.
Dreadnought Hospital, Greenwich.—Anaesthetist. 50 Guineas.
Durham County Council.—District Tuber. M.O. £500. Also M.O. for Earl's House Sanatorium. £450.
Ealing Borough.—Ophth. Surgeon. £275.
Godalming, King George V. Sanatorium.—Asst. M.O. £350.
Golden-square Throat, Nose, and Ear Hospital, IV.—H.S. £100.
Halifax General Hospital.—Jun. Res. M.O. £250.
Hampstead General and N.W. London Hospital, Haverstock Hill, N.W.—H.S. At rate of £100.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.S. At rate of £75.
Hostel of St. Luke, 14, Fitzroy-square, IV.—Res. M.O. At rate of £200.
Hove General Hospital.—Res. M.O. At rate of £150.
Huddersfield Royal Infirmary.—H.S. for Eye, Ear, and Obstet. Depts. At rate of £150.
Jersey General Hospital and Poor Law Infirmary.—Asst. Res. M.O. At rate of £150.
Kingston-upon-Hull City and County.—Asst. M.O.H. £600.
Lancaster Royal Infirmary.—Jun. H.S. At rate of £130.
Lewisham Hospital, High-street, S.E.—Asst. M.O. £350.
Leytonstone Children's Home, High-road, E.—Part-time M.O. At rate of £210.
Liverpool University.—Lectureship in Bacteriology. £400.
L.C.C.—Temporary District M.O.'s for Special Areas.—£100—£235.
London Jewish Hospital, Stepney Green, E.—Res. M.O. and H.P. At rate of £150. Also H.S. and Cas. O. Each at rate of £100.
London
London
London Coll.
Manches
Middlesex
Mount Vernon Hospital, Northwood, Middlesex.—H.S. At rate of £150.
New Zealand, Wanganui Hospital.—Radiologist. £800.
Nottingham, City Mental Hospital.—Jun. Asst. M.O. £350.
Portsmouth Royal Hospital.—H.S. At rate of £130.
Prince of Wales's General Hospital, N.—Hon. Physician to Dept. of Physical Medicine.
Princess Louise Kensington Hospital for Children, St. Quinton-avenue, W.—Hon. Asst. Physician. Also two Clin. Assts. for Out-patient Sessions.
Queen's Hospital for Children, Hackney, E.—Dermatologist.
Royal Chest Hospital, City-road, E.C.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.
Royal Dental Hospital of London, 32, Leicester-square, W.C.—Two Part-time House Anaesthetists. 10s. 6d. per session.
Royal Free Hospital, Gray's Inn-road, W.C.—Dermatologist.

St. Charles' Hospital, St. Charles-square, Ladbroke-grove, W.—Asst. M.O. £350.
St. James' Hospital, Ousley-road, Balham, S.W.—Asst. M.O. £350.
St. Mary's Hospital, W.—Second Obstet. Surgeon for Out-patients.
St. Thomas's Hospital, S.E.—Ophthalmic Surgeon.
Sheffield Royal Hospital.—Clin. Asst. to Ophth. Dept. £300.
Sheffield Royal Infirmary.—H.S. Also Aural H.S. Each at rate of £80.
Sheffield, Winter-street Hospital.—Asst. Tuber. O. £350.
Southampton Borough General Hospital.—Asst. Res. M.O. £350.
Southend-on-Sea County Borough.—Asst. M.O.H. £600.
South London Hospital for Women, Clapham Common, S.W.—Clin. Asst.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. and Jun. Res. H.S.'s. At rate of £150 and £100 respectively.
West Suffolk County Council.—Asst. County M.O. and Asst. School M.O. £500.
Wolverhampton Royal Hospital.—Asst. Pathologist and Med. Reg. £150.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £150.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Helensburgh (Dumbartonshire) and Rochdale (Lancashire).

Births, Marriages, and Deaths

BIRTHS

LLOYD.—On Oct. 6th, at Cheltenham, the wife of J. P. F. Lloyd, F.R.C.S. Eng., of a son.
 MCCOMAS.—On Oct. 11th, at Park Vale Nursing Home, Streatham, the wife of Geoffrey McComas, M.D., M.R.C.P. Lond., of a son.
 ROSE.—On Oct. 6th, at Welbeck-street, W., the wife of Dr. S. Rose, of Wimbledon, of a daughter.
 STANLEY.—On Oct. 5th, at Ware, Herts, the wife of Brian Stanley, B.Sc., M.R.C.P. Lond., of a son.
 STANLEY.—On Oct. 10th, at East Grinstead, the wife of Roger Stanley, M.R.C.S. Eng., of a son.
 WILSON.—On Oct. 6th, at St. Dennis, Cornwall, the wife of C. M. Wilson, M.B., Ch.B. Edin., of a daughter.

MARRIAGES

CUTTING—PHIBBS.—On Oct. 5th, at All Souls', Langham-place, Philip Edwin James Cutting, M.D., B.S. Lond., D.T.M. Liverp., C.M.S. Hospital, C. only child of the Rev. Alfred Phibbs . . .
 HALL—GOULD.—On Oct. 5th, at the . . .
 Watford, Herts, Gilbert Steward . . .
 to Mary Elaine Gould, M.B., B.S. Lond., elder daughter of the Rev. F. J. Gould, of Watford.
 HOEY—SMALL.—On Oct. 8th, in London, Trevor Hoey, M.B. Oxon., M.R.C.S. Eng., to Elizabeth Napier Small.
 PRICE—BROCKBANK.—On Oct. 5th, at Great Barton Parish Church, Cyril Frederick Price, M.B., B.S., to Dora Elizabeth Brockbank, M.B., B.S. Lond.

SILVER WEDDING

RAVEN—ROBERTSON.—On Oct. 11th, 1910, at Bishopsbourne, near Canterbury, Hugh M. Raven, M.R.C.S., L.R.C.P., eldest son of the late Thomas Raven, M.R.C.S., of Broadstairs, to Jean, daughter of the late John Robertson, of Alassio, Italy.

DEATHS

CORTHORN.—On Oct. 8th, Alice Mary Corthorn, M.B., B.S. Lond., B.Sc., aged 76.
 DWYER.—On Oct. 10th, in Dublin, Sir Frederick Conway Dwyer, M.D., F.R.C.S.I., ex-President of the Royal College of Surgeons in Ireland, aged 75.
 MINETT.—On Oct. 5th, at Uplyme, Devon, E. P. Minett, M.D. Brux., D.P.H. Camb., D.T.M. and H.
 NIBLOCK.—On Oct. 10th, at Bournemouth, Lieut.-Col. William James Niblock, M.B., F.R.C.S.I., I.M.S. (ret.).
 SMITH.—On Oct. 6th, at Ambleside, Charles Edwin Smith, M.R.C.S. Eng., late of Stretford.
 WILKINSON.—On Oct. 8th, at Swindon, Wilts, St. John Wilkinson, F.R.C.S. Edin., D.P.H., retired Major, R.A.M.C.
 WILSON.—On Oct. 5th, at Bourton, Dorset, after a long illness, Archer Herbert Wilson, M.A., M.B. Camb., late of the West African Medical Staff, South Nigeria.
 YOUNAN.—On Oct. 11th, at Minehead, Arthur Charles Younan, M.B. Edin., retired Lieut.-Col., I.M.S., late Med. Off., 25th Punjabs, Rawal Pindt.

N.B.—A fee of 1s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

MORE HOSPITALS FOR SOUTH SHIELDS.—In a special report to the town council, Dr. Campbell Lyons, the medical officer, recommends the erection of a new isolation hospital, a maternity hospital, and a new municipal clinic. It is suggested that assistance for the schemes should be sought from the Commissioner for Special Areas.

NOTES, COMMENTS, AND ABSTRACTS

THE QUETTA EARTHQUAKE

THE medical problems of the earthquake at Quetta were among the most formidable of all the problems which that disaster involved. Most fortunately, the earthquake which destroyed the city and the Royal Air Force lines with great loss of life largely spared the cantonments and left 12,000 able-bodied, disciplined troops available for rescue work. Every available army lorry and vehicle was sent straight to the devastated areas full of troops, and was then used to augment the ambulance services sent down by the British and military hospitals. A relief headquarters was opened in the ruined Quetta Club in the early morning, and the rescue work was at once organised into areas by General Karslake; the police were all dead and there was no civil machinery left. The city and the Civil Lines were subdivided into unit allotments, medical aid posts were arranged, and ambulance services organised. Extra medical assistance was requisitioned from India, and the local medical staffs of the two military hospitals, assisted by civilian doctors, carried on. The civil and missionary hospitals had been destroyed and the military hospital buildings had been rendered unsafe, so the verandahs and tents were used instead, with stretchers and mattresses instead of beds. Before dawn a hundred officers' wives had reported for duty as emergency nurses. The brunt of the rescue work fell inevitably on the medical profession, and they rose to the occasion superbly; how well is graphically related in the official account just published by the Government of India.

Many of those who worked without ceasing for the next week had already been injured; one doctor reported for duty immediately on his rescue after lying buried in the ruins of his bungalow for several hours. The Indian Military Hospital, with seven doctors, admitted 4500 injured in the first two days; the staff performed 450 major operations, gave 1200 anaesthetics, and set 300 fractures. In the first fortnight nearly 25,000 patients were treated. Fortunately there was a full supply of all medical and surgical necessities.

The problems of sanitation were pressing, and the presence of human and animal corpses became a deadly menace; but so efficient were the methods adopted that no epidemic broke out. The task of the rescuers was immensely lightened by headquarters, for the Commander-in-Chief at once put all the resources of the Army in India at their disposal. Officers, nurses, and medical stores were immediately sent to Quetta by air; three sections of a field ambulance from Waziristan and two sanitary sections from the Eastern Command were mobilised and sent to Quetta, and six tons of medical stores were dispatched from various centres in India. The Royal Air Force, with the Viceroy's own aeroplane, the *Star of India*, flew backwards and forwards from June 1st to the 19th, flying 775 hours in trying weather conditions. They conveyed, besides medical personnel, over 12,000 lb. of medical stores and tinned goods, 4300 lb. of clothing, an X ray apparatus and a wireless set, and evacuated 99 adults and 41 children. The Punjab Government sent doctors, nurses, and medical assistants, and looked after refugees who arrived in the province, as quickly as possible, with large supplies of stores, and the Punjab Red Cross organisation sent bandages and clothing of all kinds. A strong contingent of Boy Scouts left for Quetta at once, and a private medical aid detachment was taken from Multan by a public-spirited Indian. Between ten and fifteen thousand Punjabi refugees returned to their province during the fortnight after the earthquake. The Mayo Hospital at Lahore was expanded to accommodate hundreds of cases of injury; the ordinary hospital staff was reinforced by voluntary helpers, and rest camps were established at most of the large towns.

The response from the public in the way of personal service, gifts of money, clothes, and food was remarkable, and Indian ladies of good position came forward to help in hospitals and first-aid stations. The Red Cross Association, St. John Ambulance, and the Boy Scouts Association did excellent work.

The public health commissioner, after examining the position, reported that immediate large-scale operations were to be deprecated owing to the danger to health which the simultaneous exhumation of large numbers of bodies would cause. It was, however, proposed that the main shopping areas should be salvaged and the broader thoroughfares cleared. This was done, and salvage was also carried out in a certain number of shops and houses in the city where the damage was small. A completely organised labour corps of 2000 men set to work to clear the streets. During these excavations hundreds of bodies were dug up, bearing the appearance of having been killed outright by the first shock. An extraordinary story arose that a sweetmeat seller had dug his way out of his ruined house after 47 days' imprisonment, but this was not confirmed. If Quetta is to be rebuilt, the task will be an enormous one, but the Government will certainly not again employ their servants in the area unless they are satisfied that similar effects from future earthquakes can be prevented.

BIOLOGY IN SCHOOLS

THE movement for the adequate teaching of biology in schools is now being reflected in the production of books designed to facilitate class-instruction. Three that have reached us recently approach the subject from different, but in each case original, points of view.

Mr. Palmer makes a definite break away from the traditional text-book of elementary biology.¹ Abandoning completely the "type" system the author has endeavoured to give a general idea of the manner in which animals and plants function, the various functions being discussed separately. Hitherto elementary physiology has been illustrated mainly from plants. The suggestions given here for practical work on animals are welcome. The second half of the book deals briefly with the main characteristics of the principal groups of organisms with the minimum of anatomical detail. Two concluding chapters deal with Evolution and Heredity and with scientific method. Mr. Palmer is obviously an enthusiast and his book is inspiring. Sometimes, however, he betrays a certain lack of understanding of the mind of the child for whom he is writing. His manner savours a little of the well-informed lecturer trying his hand at school teaching and much interested in the experiment. In some places—e.g., in his analysis of the chemistry of muscle contraction—he confuses the issue with unnecessary detail. At other times, as when stating the functions of the ductless glands and of the chromosomes, he forgets that such facts are of little interest without some mention of the evidence on which they are based. It is doubtful also whether the final chapter on the methods of science will evoke much response. The nature of induction, hypotheses, &c., should be self-evident from the rest of the book. Few children would interest themselves in these principles as abstractions, and clear thinking may even be hindered by a too early attempt to tabulate the methods involved. The author's attitude is clearly mechanistic. Without disputing this point of view, it might be pointed out that a child does not naturally look upon living things in this light, and that some bridge must be built between the common-sense view and the scientific explanations of living things.

¹ *Living Things*. By Richard Palmer, Lecturer in Education in the University of Liverpool, formerly Assistant Lecturer in Zoology, University College, London. London: George Allen and Unwin Ltd. 1935. Pp. 400. 7s. 6d.

It is therefore to be regretted that, though the word "organism" is often quoted, there is no note on the meaning of the word nor any discussion of the fundamental problem of organisation.

Until recently the teaching of biology in schools has usually taken the form of dilettante nature study at early stages followed by a course on the anatomy of a series of dead animals in preparation for examinations. It is now generally realised that the main objective of biology in schools should be the study of living animals in their proper environment and that this study can be approached in a scientific manner. There are, however, many technical difficulties to be overcome. To obtain the necessary animals and to keep them in a healthy condition and to devise suitable experiments to illustrate their activities requires time and experience. Mr. Green² not only gives some useful information on histological, microscopical, and dissection technique (which can be found elsewhere), but also describes methods of making and maintaining aquaria and vivaria and of feeding various animals. Teachers should welcome a book which brings this much needed information together. It would have been of even greater value had the author included more suggestions for the performing of elementary physiological experiments.

Miss Phillips and Miss Cox start their book³ by discussing the value of biology in the very earliest stages of education. They point out that biology, as well as the more "exact" sciences, can afford a training in accurate observation and logical reasoning. A passionate interest in living things is natural to a young child, but to widen this interest without destroying it demands the greatest skill on the part of the teacher. Enthusiasm for the subject, though essential, is not enough; it is necessary to understand the minds of children at different ages and to plan a course in such a way that sound knowledge is imparted while interest is maintained. Many hints are given in this book which should prove of value to teachers, and practical suggestions are made for courses in class and field work throughout the year for children of different ages.

DR. (BATH) OLIVER

NEXT Thursday the Wine and Food Society meets in Bath, and one of its pleasant duties is to unveil a memorial to Dr. William Oliver, F.R.S., inventor of the famous biscuit. Dr. Oliver was one of the founders of the Bath Royal Mineral Water Hospital, and testimony not only to his medical skill but to his many interests and his literary aptitude is to be found in the letters of his contemporaries. Though no doubt these polite accomplishments appeal to the members of the Wine and Food Society it is his work as an innovator that they delight to honour. Shortly before his death in 1764 he confided the recipe of the biscuits to his coachman, Atkins by name. He also gave the man £100 and ten sacks of the finest wheat flour; and on this foundation Atkins opened a shop in Green-street and soon acquired a large fortune from the sale of "Bath Oliver's."

EXAMINATION PAPERS EXAMINED

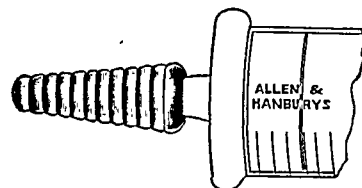
THE man on the job may be supposed to know when a tool is missing, and Dr. Mitchell Heggs tells us in the preface to his collection of papers for the London M.B. finals⁴ that he realised the need for such a book when he was working for this examination. The questions, which are taken from papers set during

the years 1920-35, are classified under the general headings of surgery, obstetrics and gynaecology, medicine, forensic medicine, public health, and pathology, and are further arranged in suitable subdivisions. Each is dated, so that the statistically minded may estimate its chances of revival; but Dr. Heggs, alas, attempts neither prophecy nor comment. Needless to say his book as a whole tends to emphasise the combatant rather than the constructive side of medical studies. But no doubt it will sometimes give substantial aid towards the defeat of the London examiners.

A USEFUL ADAPTER

Dr. OLIVER WALKER writes: It may interest some of our readers to know that they can obtain an adapter

making an airtight joint between a "Record" syringe and a gum elastic or rubber catheter of any size. It will be found of use in blowing through a blocked catheter in situ or for irrigation, aspiration, and the like. The adapter, which is made of chromium-plated metal, can be obtained from Messrs. Allen and Hanburys Ltd.



INSURANCE AGAINST PROLONGED ILLNESS

A BENEFICIARY writes: "Will you allow me to advise every medical practitioner and dentist to insure with the Medical Sickness Annuity and Life Assurance Society, which has been founded by medicals for the benefit of their fellow medicals with a board of directors consisting of doctors. In 1925 I suffered from infective endocarditis, pulmonary embolism, and other complications which prevented me from working, and during the whole of this time on the first day of the month I have received a cheque. Had I insured elsewhere under an annual contract I should have been paid for a year, after which the company would not have taken any further risk and it would not have been possible for me to insure again. If all medical and dental students were to insure with this society immediately they are qualified—and the younger they are the smaller is the premium—they will find their troubles lessened, if like myself they contract a prolonged and incurable disease. If the sickness is a short one the benefit will help to pay the locum tenent's fees."

NEW PREPARATIONS

MONOTREAN, which is made by Luitpold-Werk, Munich, and newly put on the market in this country by Medical Laboratories Ltd., 40, Pall Mall, London, S.W.1, is a preparation of papaverine and quinine designed to relieve vertigo. Each tablet weighs 0.2 g. and contains 0.04 g. of papaverine. The remedy is recommended both for Ménière's disease and for giddiness associated with organic lesions; for Ménière's disease the suggested dose is one tablet three times daily after meals for 6-8 weeks, and subsequently one tablet twice a day until the attacks cease. Good results in 41 cases were reported by A. E. Lampé in 1930 (Münch. med. Woch., 1930, lxxvii., 1630) and he noted no unpleasant effects save noises in the ear produced in some cases by quinine at the beginning of treatment. One patient had used the remedy as a preventive daily for six years. Since papaverine is an opium derivative the question of possible addiction arises. The belief expressed in text-books, however, is that this alkaloid does not produce either tolerance or habituation, and its toxicity is low. It is mildly narcotic and analgesic, and relaxes plain muscle, including the arterioles.

¹ Zoological Technique. By T. L. Green, B.Sc., F.R.E.S., Lecturer in the Department of Education, University of Bristol. London: Altman and Son Ltd. Pp. 118. 5s.

² The Teaching of Biology. By M. E. Phillips, B.Sc., formerly Biology Mistress, Godolphin and Latymer School; and L. E. Cox, B.Sc., F.R.S., formerly Lecturer in Biology, Grey-stoke Place Training College. London: University of London Press Ltd. 1935. Pp. 159. 4s. 6d.

³ The M.B., B.S. Finals. By F. Mitchell Heggs, M.B., M.R.C.S., house surgeon, casualty officer, and resident anaesthetist, St. Thomas's Hospital. London: J. and A. Churchill Ltd. 1935. Pp. 95. 6s.

ADDRESSES AND ORIGINAL ARTICLES

SOME EPOCHS IN MEDICAL RESEARCH *

BY SIR HENRY DALE

M.D. Camb., F.R.C.P. Lond., SEC. R.S.

DIRECTOR OF THE NATIONAL INSTITUTE FOR MEDICAL RESEARCH

AMONG his many and generous benefactions to the college, which long held a central place in his interest and his devotion, William Harvey, as you know, provided for the delivery of an annual oration "to commemorate all the Benefactors of the College, and to Exhort the Fellows and Members of the College to search and study out the secrets of Nature by way of Experiment." Harvey thus formally bequeathed to us a great tradition, and took care that we should annually be reminded of its meaning and its claim. A Fellow of this college could receive no higher honour than to be called upon thus to commemorate William Harvey himself, as the greatest of our benefactors, and to obey his injunction; and I thank the president for having, in this year, accorded this honour and this duty to me.

A New Method of Increasing Knowledge

We remember with pride that Harvey was lecturing on anatomy to this college during the twelve years which preceded and led up to the publication of his immortal book. It is on record that the transforming conception of the function of the heart, as a pump driving the blood "as it were in a circle," had already taken shape in his mind when his first course of these lectures began. Of the earlier course of development which had led him to the great discovery we know little beyond what he tells us in his book, and there in logical rather than historical order. We may feel certain, however, that the initial incentive to his inquiry was received during his studies in Padua. He tells us, indeed, that the discovery and description of the valves in the veins, by his teacher, Fabricius, acted as a direct stimulus; and there was other knowledge already then available, and waiting only for the central conception with which Harvey was to give it unity and simple meaning. The passage of blood through the lungs, from the right to the left side of the heart, had been clearly put forward in the book of Realdus Columbus, who may have seen it in the earlier tract of Servetus; Cesalpinus had apprehended the meaning of the heart valves, had argued that expansion of an artery with the pulse must be synchronous with the systole of the ventricle, and had even recognised that blood flows from the heart in the systemic arteries and to it in the veins. We might receive the impression that a simple step only was needed, for the discovery that the blood has a continuous and double circulation. My predecessor of two years ago, Sir Thomas Lewis, suggested to us, indeed, that the discovery could not long have been delayed, even had Harvey not made it, and that with the introduction of the microscope it could not have remained concealed. I suspect that, in that opinion, too little influence may have been allowed to the blinding effect of age-long tradition and doctrine, to question which was still an impiety, and which still befogged the minds even of those among Harvey's predecessors

who had most nearly arrived at the truth. I feel no strong conviction that even Malpighi, when the microscope showed him the movement of blood in the capillary vessels, would have known the meaning of what he saw, if Harvey's experiments, presented in a masterly array of argument, had not swept away the doctrine of Galen before the capillaries could be seen. It is clear that Harvey's own teacher, Fabricius, though he saw the valves in the veins and even observed their obstructive effect when the blood was pressed towards the periphery, thought of them only as preventing a too rapid passage, in what still seemed to him a natural direction of the flow. We know, too, that when, after years of experiment, demonstration and argument before this college, Harvey gave his discovery to the world, it found a world unready to accept it, even in those circles which had the same access to knowledge of all that had been done before Harvey. The rare combination was needed of the scientific insight of genius, with a character and a courage of the highest order, to enable Harvey to break through the mists of hallowed error and to walk boldly into the light of a new epoch.

I am in the fullest agreement, however, with Sir Thomas Lewis and with others among my distinguished predecessors, in regarding as Harvey's greatest achievement, not that he made a discovery of such profound and permanent significance, but that he created and displayed for all time the method by which such discovery may be attained and made secure. In the dedication of his book, "*De Motu Cordis*," he lays down the principle of his method—"not from books, but from dissections; not from the positions of philosophers, but from the fabric of nature"; and then, in the book itself, he gives us the supreme example of its application. Again and again in his writings he recurs to this new principle of research, and proclaims his creed with an apostolic fervour. Thus, in his less familiar book on the *Generation of Animals*, "It were disgraceful, therefore," he writes, "with this most spacious and admirable realm of nature before us, and where the reward ever exceeds the promise, did we take the reports of others upon trust, and go on coining crude problems out of these, and on them hanging knotty and captious and petty disputations."

To the men of his day Harvey was preaching a new doctrine, and proclaiming a new method of increasing and securing knowledge. In this, indeed, he moved with the advancing thought of his time, and of the great men with whom he had had contact; for Galileo was a professor in Padua when Harvey studied there, and Francis Bacon was Harvey's patient. To us it may seem now to be a platitude, that science advances by experiment and by direct appeal to Nature, rather than by disputation about what others have observed, or we ourselves have thought and believed. Yet, as Harvey seems to have foreseen, all of us, whether our effort to advance knowledge is made by the bedside or in the laboratory, need still to be reminded of this now familiar truth. The winning of real knowledge by experiment is slow and laborious, and exacts a stern discipline, while speculation offers an easy invitation to the ingenious mind. Theories we must have, to give system to our facts and direction to our experiments; and the temptation is ever present, to the eager experimenter even more, perhaps, than to the quiet observer, to press new facts into the framework of

* The Harveian Oration delivered before the Royal College of Physicians of London on Oct. 18th, 1935.
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a plausible theory, and to distrust or to disparage those which refuse to fit easily into a fancied picture. We stand all in daily need of Harvey's exhortation, to approach Nature with clear vision and alert attention, so that we may receive her teaching with free and humble minds.

Harvey and Clinical Research

Sir Thomas Lewis has rightly claimed that Harvey, the physician, was the father not only of physiology but of clinical science. In Harvey's work we may find, indeed, the true beginning of the whole fabric of experimental medicine, of which our own times have witnessed so prodigious a development. No man, with Harvey's passion for inquiry, and with his faculty for patient and precise observation, could have failed to accumulate material of great interest and significance in his practice as a physician. It is sad to think how little of this remains on record for us. In "*De Motu Cordis*" he forsees that "every part of medicine, physiology, pathology, semeiotics, and therapeutics" can be illuminated by the new truth of the circulation which he has declared, and that a field for study has been opened, so vast that his "whole life, perchance, would not suffice for its completion." In his first argumentative pamphlet, addressed to Riolan in defence of the circulation, published in 1649, he still speaks of his intention of publishing his "*Medical Anatomy*," which from his description of its contents might have made him the first of morbid anatomists. Elsewhere, in the essay on Parturition, which is richer than most of his writings in clinical records, he refers to one case as introduced from his "*Medical Observations*." We shall never know how much of Harvey's records of clinical research may have been lost to us by the political robbery and destruction of his papers during the Civil War. Scattered through his published work we find but a sample here and there, as in the clinical experiment introduced, with but little relevance indeed, into a chapter of "*De Generatione*." There Harvey describes a young nobleman who, as the result of fractured ribs followed by suppuration, was left with a permanent, open cavity in his side. At the bottom of this Harvey's exploring fingers encounter the rhythmically protruded apex of the heart, covered only by a layer of "fungous flesh"; so that he can now verify on man, and demonstrate to the King, the correspondence of the apex-beat and of the pulse at the wrist with the systole of the ventricle, in conformity with what experiments on animals had shown him long before; but he can also add the new observation, which no animal experiment could have enabled him to make, that the normal heart is without any sense of touch.

The Genesis of the Royal Society

Harvey was a physician, and approached his problems as such; but he was a man of his own period, or in advance of it, ranging in eager inquiry over the whole animal kingdom, and using everywhere the simple methods of investigation which came within the scope of his training and his equipment. In "*De Motu Cordis*" and again, more definitely, in "*De Generatione*," we find reference to another of his intended publications, which should have dealt with the Causes, Uses, and Organs of Respiration. In the earlier and justly more famous book we find him still accepting the old doctrine, that the function of air in the lungs is to mitigate the heat engendered in the heart; but by the later date he has had a glimpse of a truth which could

not have been clearly seen with the knowledge of his time, and was not to be truly revealed till eleven years after his death. Discussing the need of the newly born infant for air, when once it has breathed, "it is," writes Harvey, "as if the heat were rather enkindled within the foetus than repressed by the influence of air." He makes the suggestion with doubt and hesitation, admitting that it deals with a question of the greatest difficulty. It is no more, indeed, than an inspired guess; but it brings Harvey into another association, to which he belongs as of right, and to which we may feel certain that he would have belonged in fact, had he lived but a few years later. As early as 1645, when Harvey was still attached as physician to Charles the First, a group of men had begun to meet for discussion of the new experimental philosophy, stimulated by the writings of Bacon and by the news of physical discovery coming from Italy. Harvey's "*De Motu Cordis*" must also have been known to them. Later they met in two groups, in London and Oxford; and the group meeting in London included Harvey's close friend Dr. George Ent, while among those meeting in Oxford was another of his friends, Dr. George Bathurst of Trinity College. Bathurst had even shared in Harvey's embryological observations; for Aubrey tells us that Bathurst "had a hen to hatch eggs in his chamber, which they (Harvey and Bathurst) opened daily to see the progress and way of generation."

Harvey, as we know, retired in 1646 to his brother's house; and when, after the Restoration, the groups of experimental philosophers became, in 1662, incorporated as the Royal Society of London by a Charter from the new King, who desired "with a particular grace" to "encourage philosophical studies, especially those which by actual experiments attempt either to shape out a new philosophy or to perfect the old," Harvey had been dead for five years. But the spirit of the men who formed the new Society was that of Harvey, and their activities were explicitly determined by the principle which he had so insistently advocated, and of which his own work had given a shining example. His intimate friend, George Ent, who was his junior by 26 years, was a member of the Royal Society's first Council.

The Meaning of Respiration

The Royal Society, in its early years, may even be regarded as having, in a more particular sense, continued the work which Harvey had begun. Malpighi had seen the blood capillaries before the Society was incorporated, but Leeuwenhoek's much fuller observations on them were made public in a letter to the Royal Society, as were so many of the discoveries which he so amazingly made with his simple microscopes. It was a group of the early Fellows in the Society, including the great Robert Boyle, Robert Hooke, the Society's first curator of experiments, Richard Lower, and John Mayow, who made the first new stride forward in the science of physiology, which Harvey had founded. Harvey, as we have seen, had begun already in 1651 to doubt the doctrine that the function of respiration was to cool the blood, and to suspect that the air in the lungs might even "enkindle" the heat in the body. He himself could have carried the idea no further, but we may imagine how he would have rejoiced, if he could have been with Boyle and his associates, to watch its development in the light of their new discoveries. For, while Harvey's discovery of the circulation was based on the application of simple

mechanical principles to precise anatomy, and on the experimental examination of the working of the heart and the blood-vessels in living animals, the meaning of respiration could only be revealed by a knowledge of the chemistry which Boyle and his followers were newly creating for themselves. It had to be recognised that the function of the respiration involved a process of the same nature as combustion; and neither process could be understood, until the discovery of oxygen had essentially been made. And this, in effect, was what Boyle, Hooke, and Mayow appear to have achieved, though the full significance of their discovery was long lost to sight. Lower, the only physician of the group, who also made important extensions of Harvey's work on the heart, added to the study of respiration the important discovery, which Harvey himself might have made, that it is exposure to the air in the lungs which changes the dark venous into the bright arterial blood; and Hooke gave a demonstration to the Royal Society which Harvey might well have made to the College of Physicians, when he showed that life was maintained with an open chest, when air blown steadily into the trachea was allowed to escape from holes made in the surface of the lungs. But the essential function of the air, and in particular of what they called its "nitro-aerial spirit," in supporting a kind of slow combustion in the body, could only be apprehended by these men who were studying air and its relation to combustion in general, in the light of the new sciences of physics and chemistry, of which they were themselves among the founders.

Separation of Physiology from Clinical Medicine

It seems to me to have been inevitable that, under these conditions, the study of respiration, and with it the centre of progress in physiology, should for the time have passed out of the hands of the physicians, and into those of investigators ranging the whole field of natural philosophy. The divorce from medicine of physiology, especially in this country where Harvey had brought it to birth, not only became nearly complete—more nearly complete, I believe, than it can ever become again—but it persisted for more than a century. And this may have been partly due to the fact that progressive minds in medicine became preoccupied with the systematic task of describing and classifying diseases; but the long persistence, I believe, was due in greater measure to the failure of chemistry to adhere to the principle which Harvey had proclaimed. It seemed to turn its back on the truth which had so nearly emerged from the early experiments of the Royal Society, and followed Stahl, a learned chemist, but a dangerous and speculative theorist, who led it, and much of physiology with it, into the fog of the phlogistic theory. For more than a century progress was retarded and truth was obscured, as the results of experiments were fitted or distorted into this frame of error. It began to be shaken with Black's discovery of carbonic acid; but even Priestly, when he rediscovered oxygen, could only regard it as "dephlogisticated air," and respiration, with putrefaction and combustion, as a "phlogistic process." The experimental genius of Lavoisier was needed to sweep the cloud away, and to let the light shine, which had already been dawning more than a century earlier, so that physiology and medicine could once more go forward with a clear vision; and Lavoisier thus became the greatest physiologist as well as the greatest chemist of his day.

Conditions of Renewed Collaboration

Of the leading actors in this rather sad interlude, Stahl was a physician, as Harvey had been; but Stahl had forsaken Harvey's methods, and relapsed into those which he condemned. I think it can properly be argued, however, that from Boyle to Lavoisier the basal discoveries required for the understanding of respiration had to be made by those who were laying the foundations of physics and chemistry, without any insistent preoccupation with the structure and functions of the human body, in health or in disease.

Already, then, from the very beginning of experimental science, when, as we are apt to think with envy, the whole of the new experimental knowledge could still be assimilated by a single trained intelligence, some division of function began to show itself among the promoters of physiology, according to their way of approach, from the side of medical training or from that of the fundamental sciences. The division has inevitably grown deeper and the lines of cleavage ever more numerous. Such reproduction by fission is common to all the sciences, and is almost a condition of their growth; but, as with all but the lowest organisms, rejuvenescence and renewed vigour of development is dependent on fertilising intercourse, between units which have acquired a relative independence. There are those who see with fear and with regret the extent to which large and actively progressive sections of physiology, and even of pathology, have now loosened, or almost broken for a time, their connexion with the parent medicine, and formed closer alliance with physics, with chemistry, or with other branches of science. I believe the fears to be groundless, and I am sure that the regrets are vain. It would be deplorable, indeed, if there should be any failure in the succession of those who, coming to physiology from the side of medicine, devote themselves to increasing knowledge of the functions of the normal animal or human body as a whole, and make their contribution to the growth of medical knowledge in close coöperation, and even in functional interchange, with those whose centre of activity is in the wards. I see no reason to fear such failure: on the contrary, I think there are many signs of a growing recognition, that both physiology and clinical medicine have still this duty and this need of a more immediate coöperation. But, as at the new birth of experimental science in the seventeenth century, so to-day there are still domains opening to physiology, which can only be explored by men, some of them trained in other disciplines than that of medicine, who must find their fruitful alliances in other fields of progressive scientific knowledge. I have no qualm of doubt, that the result, in the future as in the past, will be ultimately to infuse new life into medicine itself, and to promote its renewed advance, provided only that one condition be fulfilled. And I speak now in warm endorsement of the plea, which Sir Thomas Lewis urged here with such conviction two years ago. The condition is that clinical medicine itself, in the hands of those who devote themselves to the increase of knowledge rather than its application, should remain, and should increasingly become, an experimental science, as Harvey saw it. As science grows, each of its followers must of necessity limit his expert knowledge and special technique to an ever narrowing field; but the condition for stimulating and fertilising contacts is not community of expert equipment, but a common priority of interest in the advancement of scientific knowledge, and a common direct experience

of the method by which that advance can be promoted. Harvey gave the first great example of that method, and wished that we should be exhorted still to follow it. By obedience to that exhortation clinical medicine can remain in full communion with the other departments of experimental science, giving them its full coöperation and taking its full share in the general advance.

"De Generatione Animalium"

Harvey's "*De Motu Cordis*," though its contents changed the face of medicine and opened a new epoch in science, is little more than a pamphlet in length. It may be supposed that, during the years in which he tested and confirmed his facts and interpretations, in lectures to his colleagues, Harvey was sifting his materials and clearing his mind, and was thus able to achieve this masterpiece of compact and orderly presentation, by which the reader is carried with him to a triumphant and irresistible conclusion. Very different in this respect is the other book which he left us, "*De Generatione Animalium*." This contains a wealth of careful and accurate observations, in the two series dealing with the development of the chicken on the successive days of incubation, and with the appearance and development of the foetal deer on successive days after impregnation of the doe or the hind. Harvey's description of the earlier stages of embryogeny, and especially of placentation in the cervidae, for the observation of which his royal master and patient allowed him to have unrivalled opportunity, might, one feels, gain a new interest, if edited and interpreted in the light of the comparative knowledge of these processes, which has been so greatly extended in recent years. Harvey, however, though he could, as always, observe faithfully and give a precise and vivid description of the things and the changes which he saw, lacked for their interpretation all that the microscope began to reveal so soon after his day. And though his description of the origin and development of the chick deals faithfully with the sometimes fantastic errors of his teacher Fabricius and others of his predecessors, it cannot stand with that which Malpighi was to send to the Royal Society some 22 years later, and which remained with remarkably little need of change for another two centuries.

This book, we may feel sure, is not in the form in which Harvey would himself have prepared it for publication. It is long and diffuse, and full of digressions which interrupt the progress of the argument. We know, indeed, from George Ent, that it would not have come to publication at all had his persuasion not prevailed over Harvey's reluctance. Thus we have here presented to us, not the concise account of new observations, and of conclusions directly to be drawn from them, which Harvey in the days of his mind's full vigour might have given us. We have, instead, together with records of brilliant observation, mostly set down long before, the long-drawn and wordy cogitations which had probably accumulated over many years; in particular we have, at each stage, long discussions as to the points on which Aristotle was already right, or as to those on which Fabricius can be shown to have gone astray. Harvey was an ageing man, tired with the controversies in which he had been involved by "*De Motu Cordis*," unwilling to publish more, and depressed by the thought that his work on reproduction was left permanently incomplete by the loss of his observations on insects. We may be very glad, however, that Ent overcame his scruples; for

this book not only gives us further insight into Harvey's method, when he "addressed Nature herself," and "consulted his proper senses," but allows us also to see into what vague and fruitless speculations even he could wander, far beyond the facts available to his observation, when he forsook his own precepts. Harvey, with no microscope, could have no knowledge of spermatozoa, though it is curious that he should have missed the follicles and corpora lutea of the mammalian ovary. Like his predecessors, he seems still to regard the ovary as a kind of female testis, but he rejects the view that the male and the female seed mingled in the uterus, and there gave rise to the ovum. He knows, of course, that the hen can produce ova without fertilisation by the male. Not finding the semen in the uterus after coitus, he denies that it penetrates so far. For him the semen exerts a mysterious fertilising influence on the whole female organism, under the stimulus of which the uterus conceives a fertile ovum, as the brain conceives an idea. He seems almost to allow himself to be misled by a metaphor; for, having seen waves of contraction passing over the uterus of a recently impregnated deer, he even wonders whether the brain would show such movement, if we could watch it in the act of conception.

Some discussion has arisen with regard to Harvey's views, as indicated in various passages of this remarkable book, as to the possibility of spontaneous generation. It is, indeed, not easy to be certain as to his belief. On the title-page and early in the text he clearly states that "all animals . . . are produced from ova." Later, in the same chapter, we find him stating: "Even the creatures that arise spontaneously are called automatic, not because they spring from putrefaction, but because they have their origin from accident, the spontaneous act of nature, and are equivocally engendered, as it is said, proceeding from parents unlike themselves." Here he seems to believe that, though the egg must always be the first stage, it may in some cases arise spontaneously, or from parents of a different species. Later in the book, however, we find another passage, written perhaps at a later date, which, if taken by itself, would suggest that Harvey had reached a conclusion much further in advance of the knowledge of his day. "But on these points," he writes, "we shall say more when we show that many animals, especially insects, arise and are propagated from elements or seeds so small as to be invisible (like atoms flying in the air), scattered and dispersed here and there by the winds; and yet these animals are supposed to have arisen spontaneously, or from decomposition, because their ova are nowhere to be found." We are left wondering what we may have lost by the destruction of Harvey's records of his observations on the generation of insects; how they might have related his experiments to those of his contemporary Francesco Redi; and what basis of observation they might have shown us for this remarkable passage. Harvey, we must remember, had no knowledge of any animals, or living things, too small for detection by his unaided vision. But this conception, even in relation to the living things which he knew, is much in advance of his age, and seems to link him in thought, across the coming centuries, with Spallanzani, and even with Pasteur and Tyndall.

Research of To-day

It is customary on this occasion to review some recent phases of active experimental development

in the field of the medical sciences. We could pay no more fitting tribute to the memory of the founder of experimental medicine. The task of selecting items for such mention, and especially of associating them with the activities of particular men, will probably become year by year less easy. It becomes indeed ever more difficult for any investigator to scrutinise and to appraise even those published observations and experimental records which are related to his own special field of work. It begins to be the rule rather than the exception for some new and definite advance to be announced almost simultaneously from more than one laboratory, and often from more than one country. The position may well look different in historical retrospect; but to us who live amid this urgency of accumulation, it must seem unlikely that a new epoch will ever again be opened by a Harvey or a Darwin, sifting and testing his evidence for patient decades, before he gives his theory to the world. Meanwhile we can try to distinguish tendencies, and lines of more rapid development, promoted by the activities of many, which the future may recognise, perhaps, as epochs dating from our own time.

ULTRAMICROSCOPIC VIRUSES

We date the beginning of the great epoch of bacteriology, dealing with organisms which the ordinary microscope revealed, from the work of Louis Pasteur and Robert Koch. Harvey had no knowledge of living beings below the limits of unaided visibility; but he had only been dead twenty years when Leeuwenhoek, in one of his letters to the Royal Society, first described and even recognisably figured bacteria, as seen with his simple lenses. Two further centuries passed, however, before Koch was able to give the first completed identification of a bacillus as the specific cause of a disease. When, after a period of progressive triumph, bacteriology still failed to reveal the causes of some of the most familiar and deadly among the infectious diseases, there came in our own time the intensive study of a further order of living, infective agents, below the range of ordinary microscopical vision. It is unlikely that the future will identify any outstanding names with what may be the beginning of another epoch as important to medicine as that of bacteriology, concerned with the viruses still called "ultramicroscopic" or "filterable"; though special microscopical methods have already rendered many of them visible, and all can be stopped, and even differentially separated, by filters of an adequate and accurately graded fineness. We associate the names of Ivanovski and of Beijerinck with early discoveries of such a virus as the cause of a plant disease, and those of Loeffler and Frosch in a similar sense with the virus causing the foot-and-mouth diseases of cattle. But the general advance in this field, which did not begin until a quarter of a century later, has been on a wide front, and investigators in many laboratories of many lands are engaged in it. In rapid succession the agents responsible for infectious diseases, which bacteriology had left as unsolved problems, are being identified as belonging to this group, which but a few years ago seemed so inaccessible to further research. My colleague, C. H. Andrewes, in his Oliver Sharpey lectures of 1934, discussed before this College the many respects in which conformity to this type is shown by the infective agents which transmit certain tumours in experimental inoculation. One of the recent additions to the general list of diseases transmitted by viruses, and one which has excited interest

in circles beyond that of medicine, is epidemic influenza, for the study of which by my colleagues, Laidlaw, Andrewes, and Smith, the earlier work of Laidlaw and Dunkin on dog distemper had provided some ground of experience, and had brought to notice a suitable subject of experiment, in the ferret. Further advance in the study of this, and of many other virus infections, is dependent not only on the provision of opportunity by Nature and by clinical medicine, but also on the development of new methods, which is in active progress in many laboratories. New principles of immunity, for which bacterial immunology has given at best imperfect analogies, are coming into view. The greatest difficulties of conception, however, are those connected with the dimensions of the infective units of the different members of a series showing so many points of uniformity in their general behaviour; for these units are, at the upper end of the scale, just visible by ordinary microscopy, with the appearance of very small cocci; while, at the lower end, the units of such viruses as those of foot-and-mouth disease and poliomyelitis appear to be of comparable dimensions to the molecules of certain complex proteins. Here, if the data of measurement have been rightly interpreted, we seem, through a continuous series, to pass from definite though very minute organisms to a borderland between organisation and colloidal dispersion, where biology and physical chemistry must, perhaps, join hands in interpretation of a new order of vital phenomena. It may be noted that, quite recently, confirmation has been given of a previous claim to have obtained the virus of a plant disease in the form of protein crystals.

AN EPOCH OF CHEMISTRY IN MEDICINE AND BIOLOGY

If I were asked to name a prevailing tendency of the present time, in medical, and indeed in a wider range of biological research, I should refer to the rapidly increasing dominance of chemical methods and chemical ideas. Within the memory of many of us, organic chemistry had still but a small and precarious footing in this domain. To-day, not only has biochemistry firmly established its claim to separate recognition and enrolled a growing army of investigators, but physiology, pathology, immunology, even embryology, are increasingly permeated by chemical ideas and chemical methods, which are yielding a surprising harvest of discovery, in fields which till recently seemed beyond hope of such cultivation. I can permit myself to choose but a few examples.

HORMONES

Research on the hormones is one of the directions in which, at the moment, chemistry can show a record of the most rapid advance and of unforeseen achievement. Twenty years ago, of the hormones then recognised, adrenaline alone had been chemically identified and made by synthesis. Of the others, only thyroxine, on account of its great stability, seemed possibly accessible to structural chemistry; though few could have expected that its structure would so soon be determined and its synthesis achieved. Secretin and the active constituents of the pituitary posterior lobe had been obtained in stable, though highly impure solutions; but for the other ductless glands, even the formation and secretion of hormones by them was a matter of inference rather than direct demonstration. There seemed little likelihood that such hormones would ever be extracted, and the possibility of their isolation for chemical study seemed too remote for consideration.

I believe that the successful preparation of insulin, by Banting and Best, had an influence far beyond that due to its immediate importance for medicine and for the understanding of carbohydrate metabolism, in that it aroused a new spirit of enterprise and optimism with regard to the possibility of obtaining other hormones, which had seemed equally intangible. Insulin itself, being of protein nature, still presents a difficult problem to the structural chemist; but it has been crystallised, and the interesting discovery has now been made (Scott) that the crystals are insulin in combination with metallic ions, normally those of zinc. Since insulin was first prepared methods have been found for extracting the hormone of the parathyroid glands and that of the suprarenal cortex, and it seems probable that the latter has now been obtained in a pure, crystalline form in more than one centre.

A series of hormones from the gonads have, in the space of a few years, been isolated, identified, and in more than one case even made artificially by partial synthesis. These hormones determine secondary sexual characters and cycles of sexual activity; they provide for implantation of the fertilised ovum, and for the development of the placenta and the active mammary gland. The generation which immediately followed Harvey saw the recognition of the ovarian follicles by De Graaf and the description of the spermatozoa by Leeuwenhoek; but even by the end of the nineteenth century such problems as the causes determining the development of accessory reproductive organs, and the nature and causation of the sexual cycles in different animals, had only been touched by the investigations of such lone pioneers as the late Walter Heape. And even till the second decade of the present century, the work of Heape, and of F. H. A. Marshall whom the college to-day honours with its Baly medal, stood almost isolated in this country in its bold attack on what seemed the almost impenetrable tangle of sexual physiology. To-day we are already in clear sight of the ascription of each phase of the female sexual cycle to the action of a separate, chemically identified ovarian hormone; a hormone from a ripened ovarian follicle being responsible for the oestrus in which the uterus is prepared and sensitised for its function, while another, from the corpus luteum, in due course brings about the endometrial hypertrophy, which provides for implantation of a fertilised ovum, or, failing it, terminates in the menstrual breakdown. There are yet many complexities to be unravelled; but these two ovarian hormones, as also a testicular hormone, are already substances of known chemical structure; and the luteal and male hormones have been artificially prepared from different inert sterols. In the case of the oestrogenic and of the male hormone, chemistry can now indicate, in each case, the precise structure of a less active form excreted in the urine, and its relation to that of a more active form obtained direct from the respective gonad, and presumably representing the true, effective hormone.

Behind this immediate control, moreover, and determining the development and successive phases of activity of the gonads themselves, is the anterior lobe of the pituitary body, with its complex of hormones, still beyond the reach of structural chemistry, but ever growing in apparent number, with the progressive recognition of the multiple functions of this little gland. The breath-taking rapidity of experimental progress in this particular field may be inducing a too facile postulation of a new hormone, to account for each new set of phenomena observed; but if observation is accurate and uncoloured by preconception,

the true meaning will emerge in due course. In any case it is clear that the anterior pituitary lobe exerts some kind of hormonal control over the development and activities of practically every other endocrine organ, and therewith over almost every phase of growth and of metabolism. Even more mysterious in their meaning are the recent observations of Collip and his co-workers, showing that some of these hormones, on continued artificial injection, provoke in the recipient a resistance to their own actions, which its blood-serum can then transmit to another animal.

We have noted that such of the sex hormones as have been isolated have points of common structure with the sterols, and can, in some cases, be prepared by chemical modifications from members of this group. This brings them into a curious relationship with other substances, also structurally related to the sterols, and possessing intense biological activities of widely different kinds—the antirachitic vitamin D, the cancer-producing constituents of tar, and the heart-stimulating glucosides of the digitalis group. There is evidence, again, that the organisation of the cells of the early embryo into the characteristic foetal structures is effected by a chemical stimulus, and that the substance concerned also partakes of the molecular pattern common to the sterols, and to so many substances of intense but apparently unrelated activities.

VITAMINS

In the group of the vitamins, which so recently might have been regarded as intangible traces of unstable and probably highly complicated substances, chemistry has found in recent years so successful an application, that three vitamins have already been chemically isolated, including the vitamin D already mentioned, together with the natural precursor of another, and one has already been made by artificial synthesis. In some ways comparable to the action of the vitamins is that newly discovered for choline. The recent work of Best and his co-workers seems to show that the presence of choline, or of the allied betaine, in very small quantities in the diet, is in some way essential for the maintenance of a normal adjustment between the deposition of fat in the liver and its mobilisation from that organ.

OTHER APPLICATIONS OF CHEMICAL METHODS AND IDEAS

Many other examples could be quoted of this increasingly prevalent and successful application of chemical methods, to problems in all departments of medical science, which even recently seemed to be beyond the reach of such attack. Thus, structural chemistry already has its place in immunology and begins to reveal the nature of antigenic specificity. The late Dr. James Collier made reference here last year to the evidence which is being obtained by my colleagues and myself of the intervention of known chemical stimulants, and in particular acetylcholine, in the transmission of the effects of nervous impulses across the gap between the ending of a nerve-fibre and an effector cell or another neurone, apparently throughout the peripheral nervous system. The chemical changes in a muscle accompanying its contraction seemed but a few years ago to be adequately comprised in a cycle of cleavage and resynthesis between carbohydrate and lactic acid. They are now revealed as a highly complicated chain of linked reactions, involving creatine, adenylic acid, and phosphoric acid, in addition to carbohydrates; and

the complexity still grows. Sir Thomas Lewis and his co-workers, whose earlier experiments on the skin vessels of man brought evidence of the release of a chemical substance as the cause of their reactions to injury or irritation of the epidermis, thus making contact with our laboratory investigations on the occurrence and actions of histamine, now trace the pain caused by ischaemia of a muscle similarly to a chemical source.

Conclusions

If we allow ourselves to pause a little and to ponder, standing aloof for a moment from the insistent quest for new experimental data, with its growing multitude of eager followers, we may begin to ask whether it is leading us. We have only to look back to the beginning of this century to realise how all aspects of medicine—diagnosis, treatment, and prevention—have been involved in, and in some directions transformed by the change which has been taking place. But are we really at the beginning of a new, great epoch, or merely involved in one of which the end can already be seen from afar? We can now speak familiarly of the chemical structure, and even the artificial synthesis, of hormones and vitamins of which the very existence was but recently a mere presumption from observed effects, but we have no basis even for speculation as to why a precise structure endows a substance with an effect so potent and often so complex. We can identify in the body the types of cell which are specifically sensitive to acetylcholine, and we can find evidence that impulses, passing down nerve-fibres which end in contact with these cells, excite or inhibit their activity by releasing that substance; we can even make an estimate of the number of molecules of acetylcholine released by a single impulse at a single ganglionic synapse; but we are no nearer to a conception of the meaning of a specific sensitiveness to a substance having that structure, or as to why its presence should augment the activity of one type of cell or inhibit that of another. The complex changes accompanying a muscular contraction are known in much greater detail than those of any other kind of functional metabolism; but there is yet no knowledge clearly relating these changes, or any part of them, to the mechanical event of the contraction. Are we witnessing the early stages of a major advance, in which a finer physical conception of the structure of living matter will ultimately give order and meaning to the knowledge, now so rapidly accumulating, of the chemical changes which accompany vital activities, and of the chemical substances which so mysteriously condition or control their occurrence? Or will physiology find itself brought early to a halt in the line of its present advance, baffled by a complexity which its methods have revealed, but which they cannot yet begin to resolve? None of us, I think, can answer such questions. We must be content to follow patiently what clues we find, and to go forward in the faith of Harvey, that "Nature herself is to be addressed; the paths she shows us are to be boldly trodden; for thus, and whilst we consult our proper senses, from lower advancing to higher levels, shall we penetrate at length into the heart of her mystery."

DEVONSHIRE ROYAL HOSPITAL, BUXTON.—During the year 1904 sufferers from rheumatic diseases have been admitted to this hospital, and the ordinary income has shown an increase of £531 and the expenditure a decrease of £374. The erection of a new wing is under consideration.

AGRANULOCYTOSIS

MENINGITIC SYMPTOMS WITH CHANGES IN THE CEREBRO-SPINAL FLUID IN A CASE OF RELAPSING TYPE

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With Report on the Cerebro-spinal Fluid by

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THE case to be described is of particular interest in that we can find no previous record of the occurrence of meningitic symptoms, nor of the results of an examination of the cerebro-spinal fluid, in a case of agranulocytosis. Opportunity was also afforded for chemical examination and histological examination of the blood during the prodromal period of a relapse.

The diagnosis of agranulocytosis was made during an illness which started in April, 1934, with vomiting, pyrexia, and ulceration of the gums. After a few weeks the more acute symptoms yielded to injections of Pentnucleotide, but there were subsequent relapses in May, June, September, and December, 1934, and a severe one towards the end of February, 1935. It was during this last attack that definite meningitic symptoms—drowsiness, neck rigidity, and Kernig's sign—were first observed. Each of the previous relapses had been ushered in with pyrexia, languor, and prostration, but no physical signs indicating involvement of the nervous system were detected. During each relapse the granulocytes fell to a very low level; the spleen was palpable and abnormal signs—dullness and crepitations—appeared at the base of the left lung. At no time during the entire course was *Bacillus fusiformis* or Vincent's spirilla detected in films from the ulcers of gums, throat, or tongue.

CASE RECORDS

The patient was a stout and rather florid woman of 60. The previous medical history was unimportant; she had had chicken-pox and measles while a child, and at the age of 30 "congestion of the lungs." No definite illness had occurred since, but she had suffered intermittently from flatulence, dyspepsia, and constipation, and she showed menopausal obesity. In October, 1933, she developed pneumonia at the base of the left lung with a temperature of 104° F., and was treated with injections of antipneumococcal serum. Recovery was rapid. There was no history of taking amidopyrin.

FIRST ATTACK

During the latter part of April, 1934, the patient had an attack of vomiting (which she attributed to eating oysters) with severe occipital headache, abdominal pain, and constipation. The abdominal symptoms and headache persisted but the temperature remained below 98.4° F.; the pulse-rate varied from 65 to 80. The urine was sterile; no organisms of the typhoid-paratyphoid group were found but agglutination to paratyphoid C was positive up to 1/1600. The spleen was enlarged and palpable; there was dullness and fine

crepitations at the base of the left lung; the abdomen was distended, and the liver edge palpable and tender but there was no jaundice. No rose spots were found, but the skin of the abdomen and thighs was generally affected with a miliaria which could be felt better than seen. On April 28th vomiting recommenced and the temperature rose to 100.6° F. but fell to normal on April 30th. On May 2nd the temperature rose to 101° F., with general drowsiness and increased headache. The throat was oedematous but not ulcerated, the gum margins bright red and injected also not ulcerated. The cranial nerves and optic discs were normal; the knee-jerks normal and the plantar reflexes flexor; the abdominal reflexes present but weak; arm-jerks present; no paresis or hyperæsthesia. The liver was still tender on palpation and enlarged; the spleen enlarged, palpable, and tender; there were no crepitations at the base of the lung.

On May 4th a blood examination showed 5,400,000 red cells and 2200 white cells, of which only 3 per cent. (66) were granulocytes; Arneth's count showed 3 per cent. trilobed nuclear polymorph cells and no horseshoe or rod nuclear cells; 76 per cent. small lymphocytes, 20 per cent. large lymphocytes, and 0.5 per cent. eosinophils. The hemoglobin was 70 per cent., giving a colour-index of 0.6. The sedimentation-rate was 40 in one hour.

Blood chemistry: non-protein nitrogen 34 mg., urea 7.9 mg., uric acid 4.3 mg., phosphorus 3.5 mg., and calcium 9.2 mg. per 100 c.cm.; sugar 0.065 per cent.; van den Bergh reaction 1/4 unit; alkali reserve 58.3.

A diagnosis of agranulocytosis was made and pent-nucleotide administered intramuscularly. After the second injection the temperature fell to normal and remained so for a week; two small rises occurred which reacted at once to injections of pentnucleotide. A large ulcer which had appeared on the left side of the tongue rapidly cleared up, the abdominal symptoms subsided, appetite returned, and the patient's general condition rapidly improved.

FIRST RELAPSE

At the end of May, 1934, the first relapse occurred, being ushered in by the same train of symptoms—i.e., increasing drowsiness, vomiting of bile-stained fluid which contained no free hydrochloric acid, occipital and vertical headache. The gingivitis, confined to the gum margins, recurred with ulceration affecting the gum round the two upper central incisors and extending half an inch from the teeth. Films from the gingivitis and the sloughing area failed to demonstrate Vincent's *B. fusiformis* and spirochæte; there were, however, a considerable number of spirochætal forms present identified as *Spirochæta macrodentium* and *microdentium*, with numerous long, thin thread forms of *B. necrosis*. The

breath was exceptionally foul. The clinical appearance of the ulceration differed from the characteristic ulceration of Vincent's angina; it was much less friable, of a hard leathery consistency, and not surrounded with the usual bright injected area seen in Vincent's ulceration.

Under treatment with injections of 10 c.cm. pent-nucleotide daily, the patient's condition gradually improved and on May 14th the granulocytes had risen to 34 per cent.

SECOND RELAPSE

The second relapse began in June, again with short preliminary vomiting, prostration, and ulceration of the gums, very furred tongue, and later enlarged cervical glands, palpable and tender spleen and liver-edge, and minute nodular urticaria. The granulocytes again fell to 3.5 per cent. with total white cells 2800 per c.mm.; small lymphocytes 58.5 and large lymphocytes 38 per cent., no eosinophils being detected. Subsequent blood counts yielded 1 per cent. eosinophils with little change in the relative proportion of small lymphocytes and large lymphocytes. Again under treatment with pentnucleotide, the patient's condition improved with a rise in the granulocytes to 23 per cent. on July 24th (Fig. 1).

During the early part of the relapse, daily injections of 10 c.cm. of a preparation of manganese nucleotide was tried but without influence on the temperature, clinical condition or blood count; six injections were administered. Daily injections of pentnucleotide were therefore resumed, and after the third injection the temperature again fell to normal, the general condition slowly improving. The mouth ulceration proved most intractable and eventually penetrated so deeply that the two upper incisor teeth were separated from their attachments and were extracted. The febrile period of this relapse lasted for twenty-four days. During the early part of the febrile period, the pulse-rate was increased to 106–112 with a temperature of 102°–103° F., but the pulse-rate fell to 90–96 six days before the defervescence and remained at 84–90 for three weeks after the temperature had become normal. By August the patient had sufficiently recovered to go away to the seaside.

THIRD RELAPSE

At the end of September there was a short febrile period ushered in by the same symptoms of drowsiness and languor, but passing off in a few days. The blood was not examined on this occasion. There was no mouth ulceration or marginal gingivitis.

FOURTH RELAPSE

In the beginning of December another relapse occurred with the same prodromal symptoms of increasing lassitude, drowsiness, and an

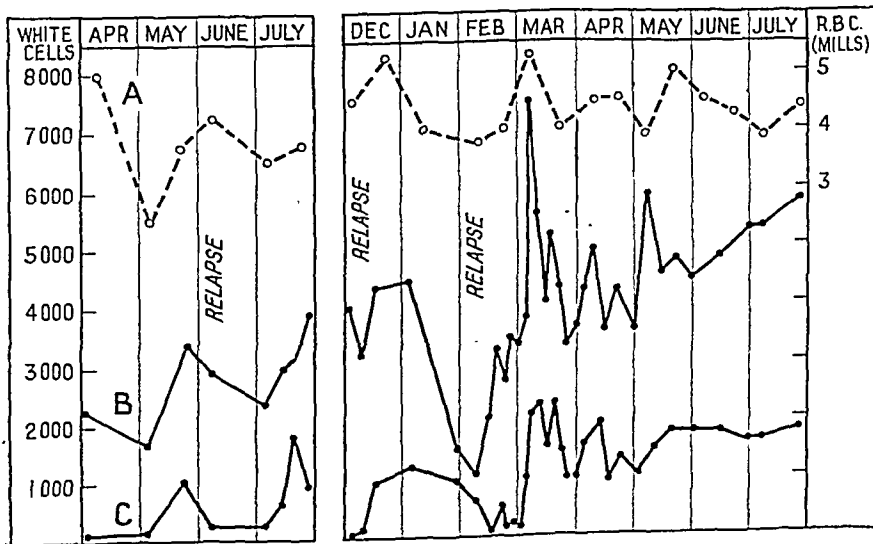


FIG. 1.—Course of blood counts. A = total red cells (millions per c.mm.); B = total white cells (thousands); and C = total granulocytes (thousands).

attack of vomiting, again attributed by the patient to unsound food. The vomit, as well as all subsequent ones, contained no free hydrochloric acid; granulocytes were entirely absent from the blood. On Dec. 14th a blood count showed: red blood-cells, 4,600,000; white cells, 3900; hemoglobin 60 per cent.; colour-index, 0.6. Arneth count: polymorphonuclears, 0; small lymphocytes, 74 per cent.; large lymphocytes, 25 per cent. A Price-Jones curve of the erythrocytes gave a diameter curve within normal limits.

Blood chemistry: non-protein nitrogen 31 mg., urea 39 mg., uric acid 6 mg., calcium 9.3 mg., and chlorides 0.390 per 100 c.cm.; urea-concentration factor, 94; urinary

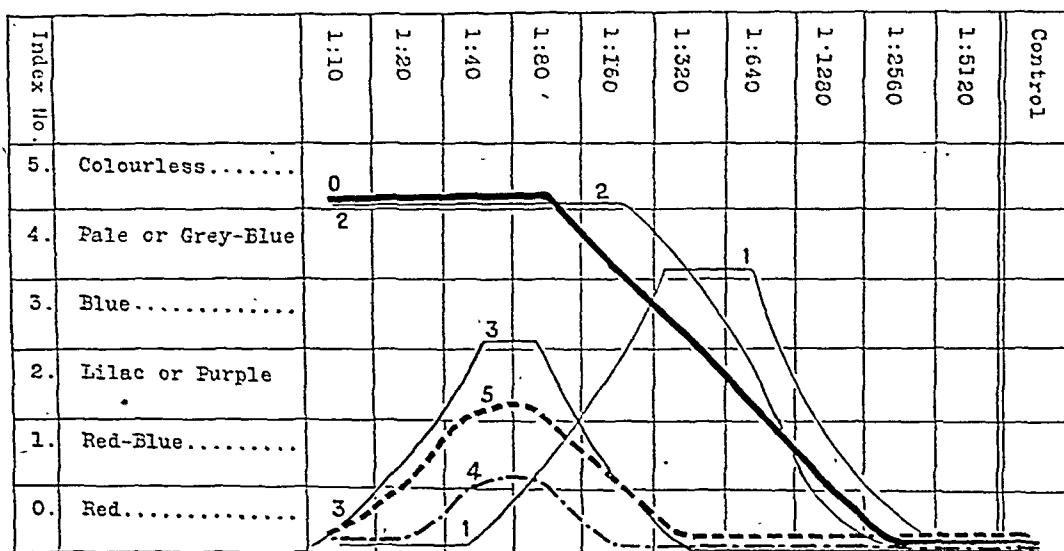


FIG. 2.—Lange's colloidal gold reaction. The black line (0) shows the patient's reaction. Typical illustrative curves (for comparison) are: (1) meningeal field, (2) paretic field, (3) luetic field, (4) normal control, and (5) control with cerebro-spinal fluid containing 0.06 per cent. total protein, but not due to syphilis or disseminated sclerosis.

urea nitrogen, 92 per cent. (urea 3.6 per cent.). Sedimentation-rate 50 per cent. in one hour; van den Bergh $\frac{1}{2}$ unit.

The same clinical signs were present as on previous occasions: enlarged and tender spleen, crepitations at left base, distended abdomen, enlarged and tender liver, minute nodular skin rash. The reflexes were unaltered. The fundi were normal. A large ulcer appeared on the lower lip and the gingivitis returned. The throat was oedematous but not ulcerated; there was mild cervical adenitis.

Pentnucleotide was again injected intramuscularly in 10 c.cm. doses daily and by Dec. 21st the pyrexia had subsided. The blood count gave 5,600,000 red blood cells; hæmoglobin, 75 per cent.; 4297 white blood-cells; granulocytes, 10 per cent. (420); small lymphocytes, 70 per cent.; and large lymphocytes, 20 per cent. By the middle of January the general condition had greatly improved although the state of the heart gave rise to some anxiety—a short, blowing tricuspid bruit developed with canter rhythm. Blood pressure 135/70, pulse 78.

Quantitative urinary examination: output of 1780 c.cm., specific gravity 1011; urea 22 g.; uric acid, 0.346 g.; chlorides, 0.5 g.; phosphates, 2.45 g.; creatinine, 1.7 g.; ammonia, 0.36 g. Nitrogen distribution was within normal limits; 83.5 per cent. urea, 4.9 per cent. creatinine, 1.6 per cent. ammonia nitrogen (low), and 9.1 per cent. residual nitrogen. There was no bile, acetone, sugar, albumin, casts, nor abnormal crystals. A second examination two days later gave almost identical results.

The patient was sufficiently recovered to sit up. The daily injections of pentnucleotide were discontinued and sodium cinnamate (2 c.cm.) injections of 20 per cent. solution given. Hepatex and Radiostoleum were given by the mouth. The blood count improved and the granulocytes rose to 1100 out of 4000 total white cells. Pentnucleotide was given once a week.

FIFTH RELAPSE

The afebrile period continued until Feb. 4th when an attack of vomiting associated with increasing languor and somnolence set in; the temperature rose to 101.5° F., with pulse-rate 100, but fell in 48 hours to normal. The spleen was again palpable and tender; crepitations appeared at the left base; there was severe vertical and occipital headache with intense drowsiness, and a decrease in urine, which now contained a considerable amount of bile. The vomit was bile-stained and contained no hydrochloric acid. Icterus was apparent.

Blood enumeration on Feb. 5th gave 3,800,000 red blood-cells and 936 white cells. Differential count:

60 per cent. granulocytes, 26 per cent. small lymphocytes, 12 per cent. large lymphocytes, hæmoglobin 50 per cent.

Blood chemistry: non-protein nitrogen 32 mg., urea 10 mg., uric acid 6.2 mg., phosphorus 3.8 mg., and calcium 9.2 mg. per 100 c.cm.; sugar 0.07 per cent.; van den Bergh 2 units; sedimentation-rate 50 per cent. in one hour. Urea-concentration factor, 261; urinary urea nitrogen, 84 per cent. The urea clearance was highly active, there were no abnormal constituents in the urine other than bile and bile salts.

On Feb. 10th, again about a week after the prodromal lassitude and vomiting, the temperature began to rise. During this, the most serious of all the relapses, the fever, instead of the continued type of former attacks, was of the remittent septic type alternating from 103° F. to 99° F. On Feb. 13th, three days after the onset of the fever, two large ulcers appeared, one on either side of the tip of the tongue, with indurated base, yellowish leathery sloughs and extremely painful. The bacteriological characters were similar to the previous ulcers—spirochaetes of mouth type, no fusiform bacilli, numerous long, slender thread forms. The granulocytes practically disappeared from Feb. 13th to 28th. Between these dates four blood counts were made, the granulocytes being 480, 100, 100, 90 (see Fig. 1).

A large indurated area appeared on one buttock near the site of one of the pentnucleotide injections; on incision a little blood and pus escaped. A bacteriological examination gave *Staphylococcus aureus* and *Streptococcus mitis*. There were no spirochaetes nor anaerobic organisms present. The abscess healed normally but the incision and drainage had no perceptible influence on the temperature fluctuations.

On Feb. 13th Dr. H. L. Tidy saw the case in consultation and advised blood transfusion; this was carried out on the 15th, a pint of citrated blood being administered intravenously. There was a good deal of immediate reaction with cerebral excitement lasting about an hour but the general condition improved during the next four days with a well-defined drop in the fever. Six days later the pyrexia had assumed the previous remittent type. There was no icterus or bile in the urine. The abdominal distension, enlargement of the spleen and liver, occipital headache, and drowsiness increased; the patient was roused only with difficulty. In spite of continued pentnucleotide injections she became progressively worse and the temperature rose towards 103° F. on Feb. 23rd with the onset of meningitic symptoms. The granulocytes were only 0.5 per cent.; small lymphocytes, 81 per cent.; large lymphocytes, 14 per cent. The total

white cells were 2000; the red cells, 4,600,000; hæmoglobin, 40 per cent.

On Feb. 24th, when the patient was first seen by one of us (C. W.-D.), she was very drowsy and appeared stuporose most of the day but could be roused with difficulty; she then complained of some pain in the neck and occipital region. Temp., 102° F.; pulse, 118; resps. 40. Pupils were moderate in size, equal and reacted normally. Fundi normal. Tongue very furred with slight ulceration. Cranial nerves normal. Moderate neck rigidity; head could not be flexed beyond the vertical line of the body. Kernig's sign positive on both sides. Arm-jerks slight and equal. Knee- and ankle-jerks absent. Plantars flexor. Abdominal reflexes sluggish and equal. Spleen palpable but not the liver. A few crepitations heard at the base of the left lung.

Lumbar puncture was performed. The cerebro-spinal fluid was under slight pressure and was clear to the naked eye. After the removal of 15 c.cm. of cerebro-spinal fluid drowsiness improved, the pulse-rate fell to 80, and the respirations to 32. Dr. Carnegie Dickson carried out an examination of the cerebro-spinal fluid and reported as follows:—

Cerebro-spinal fluid.—Naked eye: clear, colourless, and limpid fluid with no trace of blood or turbidity. Cells: 2 cells per c.mm.; in films of the centrifuged deposit, they were almost all small lymphocytes with only a very occasional slightly larger mononuclear cell; no polymorph or plasma cells seen. Total protein: 0.06 per cent. Globulin: a trace in excess with Pandey's phenol test; saturated ammonium sulphate, both in the ring and shake tests, gave only the faintest detectable trace of globulin. Chlorides: 0.732 per cent. (normal). Sugar: equal parts of the cerebro-spinal fluid and a 1 in 10 dilution of Fehling's solution gave "normal" reduction, and by MacLean's method the amount present was found to be 0.056 per cent. Lange's colloidal gold reaction: 5555432100. (Paretic type of curve.) (Fig. 2.) Wassermann reaction completely negative. Kahn flocculation test completely negative.

There was, therefore, a moderate but distinct increase in the total protein content, a trace of globulin, and a Lange curve of the paretic type.

At this time the granulocytes were only 4 per cent. with total white cells 2700 per c.cm. (Feb. 23rd); and granulocytes 3 per cent. with 3300 white cells per c.cm. (Feb. 25th). The red cells averaged 4,696,000, with Hb. 78 per cent.

Following the removal of the cerebro-spinal fluid, the patient's condition showed some improvement as regards drowsiness and stupor and the neck rigidity and Kernig's sign gradually passed off. The pyrexia continued with exacerbations and remissions until the beginning of April when a slow defervescence occurred. The pentanucleotide was continued, but in addition Acetylarsan was given by subcutaneous injection. The gradual rise in the total white cell count appears to have coincided with its administration. Nausea and vomiting occurred sporadically (free HCl was absent) until defervescence was established. By the end of May the patient had sufficiently recovered to go out for drives, and on May 25th an electrocardiogram was taken which showed the characters of myocardial impairment.

No further relapse has occurred; the patient is convalescing at the seaside, and is leading a normal but restricted existence. On July 30th the blood count showed 4,400,000 red blood-cells; hæmoglobin, 98 per cent.; 5500 white cells; granulocytes, 32 per cent.; small lymphocytes, 33 per cent.; large lymphocytes, 34 per cent.

DISCUSSION

The results of the cerebro-spinal fluid examination in this case are noteworthy in that the Lange reaction of marked "paretic" type, with slight but distinct increase in the total protein and a trace of globulin, exactly resembles the changes found in the majority of cases of disseminated sclerosis. This result suggests a chronic infection of the central nervous system involving actual nervous tissue rather than the meninges only. In both diseases—disseminated

sclerosis and agranulocytosis—an infecting agent is suspected but there is still doubt as to whether the organism is a filtrable virus or a spirochæte.

Certain other features are also of special interest. The series of five relapses, each ushered in with the same train of symptoms—a mild pyrexial attack of twenty-four hours' duration with vomiting and gradually developing lassitude for about a week, after which a mild degree of continued pyrexia supervened, followed four or five days later by development of mouth ulceration and subsequent mild cervical adenitis; total leucopenia with extreme diminution of granulocytes, the red cell count remaining little affected and with no alteration in average diameter. The involvement of the spleen and liver is also noteworthy, but there was no icterus excepting in the last and most severe relapse. It is also somewhat interesting to observe that in the last relapse, which occurred while the patient was under direct observation, the clinical symptoms preceded the fall in granulocytes but the total white cell count fell sharply, which agrees with the observations of Jackson and Parker.¹

The meningitic syndrome developed only during the last relapse, although headache and drowsiness were pronounced symptoms in each relapse and the patient's family observed the gradual onset of lassitude which preceded the actual prodromal symptoms. The rapid sedimentation-rate, low blood calcium, and high lymphocyte count are also special features of the case. The blood chemistry is mainly within normal variation with the exception of the calcium content.

Of the cases reported by Donald Hall,² some developed a swinging temperature; in others the pyrexia was of the pneumonic type; in one case *B. abortus* infection was suspected and in another the possibility of typhoid was considered. In the present case agglutination with paratyphoid C was positive to 1/1600, and with the history of vomiting after oysters was somewhat confusing. In Hall's Case 2 the patient had a relapse in which she died. No history of amidopyrin or allied drugs was ascertainable in our case as in those reported by Plum.³ Blackie⁴ reports a case of agranulocytosis complicating typhoid fever. Fisher's case⁵ apparently began with buccal infection, whereas our patient only developed the mouth symptoms after the actual onset of the disease. The use of an arsenic compound in addition to the pentanucleotide is of some importance in bringing about improvement in the blood picture, as is the failure of the manganese nucleotide to influence the blood count.

Throughout her illness the patient had been under the immediate care of Dr. Roberts Harris to whom we are indebted for drawing our attention to the case and for all facilities for investigation.

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TREHERBERT HOSPITAL.—The committee of this hospital are proposing to add a sunlight ward at a cost of £3000 to the female wards. The hospital was built in 1928 at a cost of £32,000, of which £15,000 was provided by the Miners' Welfare Fund committee and a similar amount by the workmen of the area.

APPENDICITIS IN THE AGED

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Of the thousand cases of acute appendicitis admitted each year to the London Hospital, $1\frac{1}{2}$ per cent.—about one case in three weeks—are over sixty years of age. It has been my duty to operate on a number of these cases, and my observations, together with the results of treatment in 110 cases collected from the hospital records during the last seven years, have led me to modify in these old patients the treatment so successfully applied to younger cases.

Both the patient and the course of the disease are different. Not only is the subject a poor operation "risk" demanding the minimum of manipulation and anaesthesia, but the appendix itself is almost always gangrenous or about to become so. In young people there is a striking variability in the actual condition of the "acute appendix," due to the exaggerated effect on its blood-supply of the twists and folds of the organ and its membranes, so that necrosis is a matter of conjecture in any particular case. In the aged, however, the appendicular vessels themselves are so thickened as to be unable to dilate and relieve the congestion even if otherwise unobstructed, so that gangrene rapidly supervenes in almost all cases. That this is so is shown by the descriptions of the appendix in the 110 cases investigated. The 26 cases seen on the first day of the disease were "engorged"; all but 2 of the 23 second-day cases were gangrenous, 6 with perforation; while the 18 third-day cases were all gangrenous and 13 were perforated. Further, of the 31 cases which recovered without appendicectomy, 27 have been "followed up," and only 2 have had recurrent symptoms, so that in the great majority of these cases the presumption is that the appendix sloughed during the acute attack. Five indeed had subsequent operations, usually for ventral hernia, and the appendix was found to have completely disappeared in each case, except one in which it was reduced to a partially fibrosed organ one inch long.

In the acute attack peritonitis develops as the appendix progresses towards necrosis. Thus in the cases described above, those seen on the first day had a little clear fluid only; by the second day the fluid was purulent, being shut off by adhesions in half the cases, but diffusing over the lower abdomen in the others. On the third day there was diffuse peritonitis in two-thirds of the cases, and abscess-formation in one-third, while all the patients who lived to the fourth day and after had an abscess. The almost constant course of acute appendicitis in old people is therefore—first day, engorgement; second day, gangrene and local peritonitis; third day, perforation with general peritonitis or abscess-formation; fourth day and after, abscess.

TREATMENT AND COMPLICATIONS

The problem of the elderly patient with acute appendicitis therefore is very different from that of the young one. In the latter case the actual condition of the appendix is unknown, but immediate operation is necessary to forestall the possible onset of gangrene; the operative risk is small and appendicectomy is indicated to avoid recurrence of trouble that might occur in a damaged but surviving organ. In the elderly patient, on the other hand, while the

condition of the appendix is not in doubt, the certainty of necrosis precludes the possibility of recurrent trouble; the operative risk, however, is considerable and becomes the deciding factor in treatment.

There are two great dangers to be considered: general peritonitis which is the result of the disease, and pneumonia which is the result of the treatment. It need hardly be said that the necrosis of the appendix does not in itself constitute a danger to life, except in so far as it may cause spreading peritonitis. If the process is already localised in a palpable abscess, non-operative treatment is indisputably the best; 15 such cases in this series were treated in this way with only 2 deaths from pulmonary embolism, a complication which could hardly have been avoided by operation. But in the more acute cases with no abscess, seen on or before the third day, the foregoing analysis shows that there is an even chance of the development of diffuse peritonitis, which when once generalised, is invariably fatal. Operation must therefore be undertaken to prevent the spread of purulent fluid over the peritoneal cavity, but for this purpose it is *not necessary* to remove the appendix. A drainage-tube placed accurately alongside it will prevent the pressure of fluid exudate which alone causes its diffusion. Adhesions will be able to form, and both the fluid and the necrotic substance of the appendix itself will be discharged on to the dressings.

At first sight the difference between this procedure and actual removal of the appendix may seem to be slight, but it must be remembered that with an old patient an operation *definitely planned not to remove the appendix* is a very different matter from one designed to remove it if possible. In the former case only a small incision is necessary over the iliac fossa, big enough to admit first the exploring finger and then the drainage-tube, and no disturbance of intestines is occasioned. Moreover, the muscular relaxation of the abdominal wall need not be complete, so that modifications in anaesthesia can be employed with great benefit to the patient. On the other hand, removal of the appendix necessitates complete muscular relaxation and general or spinal anaesthesia is necessary, with the attendant risk of chest complications. The wound must also be of adequate size, and all protective adhesions are inevitably destroyed as the caecum and appendix are delivered to the surface. Not only therefore is the immediate operative strain on a frail subject greater with the anaesthetic and manipulations involved in removing the appendix, but the final result is prejudiced by the added risks of spread of peritonitis at the time of operation, and of pneumonia following the longer and deeper anaesthesia required. Particularly is this the case when operation is performed on the critical second and third days when early adhesions are beginning to form. Of the fatal cases 70 per cent. were operated on at this stage and the post-mortem records show many in which peritonitis, actually seen to be localised at operation, has become general after the disturbance involved in appendicectomy. Old people seem to be able to make one effort to limit the peritonitis by adhesions, but if these are broken down the pus will spread, even though the source of infection is removed.

RESULTS OF VARIOUS PROCEDURES

These points are well illustrated by the results of the various methods of treatment (by many different surgeons) in the 110 cases investigated. There were

in all 22 deaths (20 per cent.) and autopsies were performed in 15 cases. Discounting 2 cases not operated upon, and 4 cases that were moribund on admission to the hospital, there were 16 deaths, all of which followed removal of the appendix. Of these 9 were "ill" patients with purulent fluid in the pelvis, but 7 were described as "not ill," having only a slight rise of temperature and pulse and no spreading peritonitis. Eight deaths were due to general peritonitis with paralytic ileus. In none of these was the fluid generalised at the time of operation, while in 4 of them the note made at operation stated that the fluid was definitely shut off by adhesions. It is fair to assume that certainly 4 and probably more of these cases might have been saved by the more conservative operation. There were 4 deaths from broncho-pneumonia—2 after spinal and 2 after ether anaesthesia—and there can be no doubt that the anaesthetic was at least a contributory factor in the onset of this fatal complication. The remaining deaths were due to pulmonary embolus, septicaemia, mechanical intestinal obstruction, and persistent intestinal fistula—the 3 latter following a prolonged and difficult appendicectomy in each case. The 16 deaths after appendicectomy were due therefore not to any fault in technique at operation, but at least in part to the type of operation performed.

Of the 88 cases that survived, 13 were appendix abscesses that recovered without operation. In 57 cases the patients were described as "not ill"; but 18 were "ill," 13 of whom were saved by simple drainage, while 5 had the appendix removed. The statistics can best be appreciated from the practical standpoint of the original condition of the patient, whether he was "ill" or "not ill," clinical terms based on the aspect of the patient, pulse-rate, and general toxicity. Of 64 patients described as "not ill" the appendix was removed in 59 cases with 7 deaths—an unnecessarily high mortality of 12 per cent.—while simple drainage was performed in 5 cases without a death. But of the 31 "ill" patients the mortality after appendicectomy was 64 per cent. (14 cases with 9 deaths), while after simple drainage it was only 24 per cent. (17 cases with 4 deaths), although these latter were the most advanced cases of the series, including the four described above as moribund on admission.

The possibility of intestinal fistula formation has been considered. There were 2 instances of this complication (one of them fatal) both of which were due to sloughing of the caecal wall after a difficult operation for removal of the appendix. In no case was simple drainage followed by a persistent fistula.

The case-records bring out another point—the greatly increased death-rate in those who had a paramedian incision. Of the cases operated on by this route 40 per cent. died, as against 10 per cent. after a right iliac incision. Descriptions of the autopsies after paramedian incision in these old people show a large proportion of grossly infected wounds, with extensive suppuration of the abdominal wall, and 3 cases of secondary rupture of the wound. Moreover, it is in the cases with a paramedian incision that the fatal spread of pus which was localised at operation is most striking. Allowance must of course be made for those cases where the diagnosis was in doubt, and the paramedian incision was made for exploratory purposes, but even so the best chance of survival for the patient is provided by drainage of the appendix area through a stab wound over it, with the minimum of peritoneal disturbance. In point of fact, however, the diagnosis was rarely in doubt in these cases, the great majority of which

gave the classical sequence of generalised abdominal pain, vomiting, and tenderness in the iliac fossa. A muscle-splitting incision over the appendix big enough to admit the diagnostic finger and the therapeutic tube cannot subsequently rupture and its infection is of no consequence. It is a further advantage after this incision in an old, apathetic patient, to be able to get him up on a couch to stimulate his waning interest in life, without risk of bursting the wound.

With regard to the anaesthetic, in this series of cases it has been almost exclusively either ether or a spinal novocaine preparation. The incidence of pulmonary complications was about the same with each method. However, in these cases, appendicectomy, if possible, was the object of the operation, and complete relaxation of the abdominal wall has been demanded of the anaesthetist. But if operation be undertaken with the specific purpose of drainage only, relaxation need not be complete. Gas-oxygen anaesthesia after omnopon-scopolamine premedication can be used and by the judicious use of carbon dioxide the anaesthetist can control the ventilation of the lungs. By this method congestion of the lungs is diminished rather than increased, and the bronchi are not inflamed by irritant vapours, so that the likelihood of post-operative chest complications is reduced to the minimum.

CONCLUSION

In conclusion, it may be repeated that, on account of the stereotyped progress towards necrosis in three days of the acute appendix in old people, the treatment becomes simplified. While there is nothing to be gained by removing an appendix that will remove itself, the conservative operation of simple drainage is attended by a much lower mortality, complications are fewer, fistula does not develop, convalescence is easier, and the patients do not get subsequent trouble.

I should like to acknowledge my indebtedness to the authorities at the London Hospital for their kindness in allowing me to publish particulars of their case records, and to Sir James Walton for his advice and criticism.

SURGERY IN THE TREATMENT OF PRIMARY SKIN CARCINOMA

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IN the vicinity of the radium centres the treatment of the various types of primary carcinoma of the skin is being undertaken mainly by the radium officers and constitutes their most successful class of case; but elsewhere in the country surgery still remains the only practical treatment available. Quite a number of the patients that have been submitted to surgical treatment are referred eventually to a radium centre in the hope that radium may remove the recurrent nodules of growth that have appeared in the operation scar, and, as second attempts at the treatment of malignant disease are notoriously poor and admittedly so, it has seemed worth while to examine these cases in some detail in order to discover, if at all possible, the fault in the original operation.

During 1934 there were referred to the Christie Hospital and Holt Radium Institute 5 cases of

primary epithelioma of the skin and 12 cases of rodent ulcer that had been treated surgically elsewhere and were showing recurrence in the area of the operation. Occasionally the diagnosis of malignancy has been missed, a microscopical section has not been examined, and the follow-up of the patient omitted. This is sufficiently common to warrant the dogmatic statement that every hyperplasia or indolent ulceration of the skin that comes to operation should be excised as though it were malignant, have the complete lesion examined by a pathologist, and be carefully examined at monthly intervals for at least a year, attention being directed particularly to the operation scar and the regional lymphatic glands.

When there is recurrence we find that almost always the operation scar is linear and the nodules

are situated about the middle, never near either end. Usually a few months have elapsed since the operation and the regional lymphatic glands show some enlargement, unless the carcinoma is arising in fibrosed tissues such as an old burn or lupus scar.

It is very definitely true that metastatic involvement of lymphatic glands is commoner and earlier in these cases with ineffectual treatment of the primary lesion than in those in which a cure has been obtained. As yet the treatment of the lymphatic glands lies in the province of the surgeon, but why is radiotherapy displacing surgery in the treatment of the primary lesion when it is well recognised that surgical excision offers a speedy and certain cure, excepting those cases in which anatomical consideration, or the general condition of the patient demands radiotherapy?

The answer seems to be that radiotherapy is observing the principles taught by the surgery of malignant disease, whereas the surgeon, haunted by the question of repair, cuts down the margin of safety and pays the inevitable price. Mr. A. H. Burgess used to teach that one surgeon should remove the cancerous breast and another deal with the closure of the wound, so that the skin removal should be adequate and the judgment of the extent of its removal not affected by the problem of repair. The lack of application of these principles and teaching is shown by the nodules recurring in the centre of the scar, suggesting that the usual elliptical incision has failed and should be condemned.

Given a lesion one centimetre in diameter an effective dose of gamma radiation would be applied over a circular area three centimetres in diameter; or, in other words, with a lesion the size of sixpence the area effectively treated would be the size of a five-shilling piece. Every surgeon teaches that a

malignant nodule should be excised with a margin of healthy skin of at least one centimetre in width and this means that if the lesion is the size of a sixpence the area marked out for excision must be the size of a five-shilling piece, the marginal difference of the two coins being only one centimetre. Is this what is actually done in practice? As regards depth, again one centimetre from the deepest part of the lesion is the rule and particularly here must care be taken, erring on the side of taking too much and including the deep fascia if that comes anywhere near these limits. Some of the recurrences undoubtedly come from the depths of the lesion, and here surgery should be able to improve on radiotherapy, especially the mould application of radium. Repair of the raw area is a secondary consideration and is best attempted by excising triangles of skin at opposite



FIG. 1.—Epitheliomatous ulcer arising in old burn scar. Three previous operations.



FIG. 2.—A year after excision and immediate Thiersch graft.

ends of a diameter of the area which lies along the natural line of stress in the skin, and then a little under-cutting will allow approximation of the edges of this secondarily elliptical skin incision. Failing this, primary or secondary Thiersch grafts give excellent results, depending on the depth of the wound, and if the deep surface be hard so that, as on the skull, firm pressure can be obtained, an immediate Wolff graft takes perfectly.

Diathermy is proving a pitfall in that, although the area necrosed is larger than appears at operation, this fact is tending to excuse, in the mind of the operator, a non-radical procedure with necessarily poor results: and, unless frankly palliative, the area treated should be as extensive as surgery dictates, the little extra obtained being credited to the diathermy and not made to appear on the debit side. Watching the after-results of extensive diathermies I have been agreeably surprised at the rapid and extensive repair of the lost tissues, but the process slows very rapidly towards the centre, so that for a long time the patient has a raw area in the middle of his diathermy scar. This area slowly heals, but in a considerable number of cases there has been a sudden and inexplicable growth of squamous carcinoma, commencing at the edge of the ingrowing epithelium, in cases that the operator felt sure he was well beyond the limits of malignant disease. Particularly has this been noticeable in diathermies in tissues already scarred and it is sufficiently striking to suggest that squamous epithelium growing over a large cicatricial area tends to become anaplastic the further it grows from the normal skin and normal blood-supply. Accordingly, we have resorted to wide surgical excision with immediate Thiersch grafting and the results are more encouraging, especially as careful preparation of the carcinoma with eusol

dressings renders the field of operation sufficiently aseptic to ensure a large percentage of successes with the grafting.

The accompanying photograph (Fig. 1) is taken from a case of squamous epithelioma, arising on the scar of a burn received 24 years previously. During 1933-34 the patient had two surgical removals and one diathermy of the ulcer at other hospitals. In July, 1934, I excised the ulcer, applying an immediate Thiersch graft. Fig. 2 shows the condition a year later, with no evidence of recurrence.

CONCLUSION

From this review it appears that a primary elliptical excision of a skin carcinoma tends to encourage the surgeon to trespass on the margin of safety and that better treatment is obtained if the tumour is first excised according to recognised surgical principles in the treatment of malignant disease, and the repair is regarded as a second and distinct problem of plastic surgery.

Clinical and Laboratory Notes

UNDULANT FEVER TREATED BY PROTEIN SHOCK

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Manson-Bahr¹ recorded in 1933 a case of undulant fever successfully treated by the intravenous injection of T.A.B. (typhoid and paratyphoid organisms) "as a means of inducing others to try out this method of treatment." Encouraged by his article we applied the method to a case recently under our care, with equally successful results.

The patient, a male aged 50, who had not been abroad, had suffered for the last eight years from periodical attacks of "ague," occurring two or three times a year. He had been accustomed to drink one and a half pints of milk a day for several years, warmed but not boiled. Up to three years ago the milk was, the patient understands, pasteurised, but for the last three years it was not pasteurised. Six weeks before admission he had ague attacks culminating in an acute illness, described as "acute influenza," characterised by prolonged pyrexia with severe headaches and almost daily rigors. The temperature rose on occasions to 105° F., and was usually between 99° F. and 102° F. It was suggested that he was suffering from a streptococcal infection.

The patient was admitted to the Royal Masonic Hospital on April 17th, 1935, and the same evening the temperature rose to 103° F., with pulse-rate 140 and respirations 24. The temperature gradually subsided to normal during the next five days, but rose again to 100.4° on April 26th and to 102.4° the following day with another rigor. During the rigor there was a feeling of coldness, chattering of the teeth, shivering, shaking of the limbs, followed by flushing of the face, throbbing in the head, lachrymation, and sweating. No enlargement of the liver, spleen, or lymphatic glands was detected. A blood count at the height of the rigor gave the following result: red cells, 4,290,000; hemoglobin, 80 per cent.; colour-index, 0.9; white cells, 11,000; polymorphonuclears, 56.7 per cent.; eosinophils, 1.3 per cent.; small mononuclears, 37.3 per cent.; large mononuclears, 4.7 per cent. No malaria parasites were found. The urine showed no

abnormality and was sterile. The serum agglutinated *Brucella abortus* in a dilution of 1 in 3000 (375 standard agglutinin units).

The patient had also suffered from a rash for the last ten years, which was diagnosed by Dr. A. C. Roxburgh as the adult type of urticaria pigmentosa.

The temperature did not fall to normal until six days after the second rigor. On May 4th, having previously ascertained that the blood pressure and electrocardiogram were within normal limits, an intravenous injection of 100 millions T.A.B. vaccine was given. Within an hour a severe rigor occurred, the patient was much collapsed and cyanosed and appeared very ill. The temperature rose to 104° F. and the pulse-rate to 112. A subcutaneous injection of 1 c.cm. Cardiazol-ephedrine was given, and repeated twice at six-hourly intervals. The condition of the patient had considerably improved an hour after the rigor, which he said was more severe than those he had previously experienced. He vomited two or three times and complained of abdominal pains which persisted for a few days. The subsequent course was uneventful. The temperature fell to normal in four days and did not rise again. The serum was examined 19 days after the T.A.B. injection and the agglutination titre was now only 1 in 50 (6 standard agglutinin units). The patient left the hospital on May 25th and 17 weeks later reported that he was quite well, had returned to work, and was also playing tennis.

Although in this case the protein shock therapy had a beneficial result, the severity of the reaction might render it dangerous in the presence of cardiovascular degeneration.

Our thanks are due to Dr. G. L. Eastes for carrying out the pathological investigations.

BILATERAL DOUBLE URETER

By ALEXANDER LYALL, M.B. Glasg.
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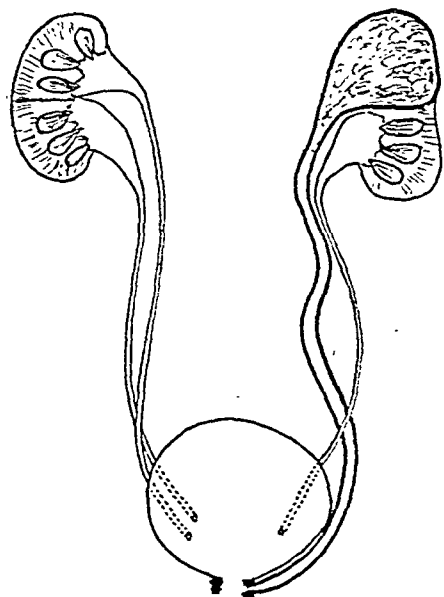
DOUBLE ureter is one of the commoner anomalies met in the kidney and is readily understood if one considers the development of the organ. The anlage of the ureter appears as a bud from the lower end of the Wolffian duct. It has an inherent tendency to divide, which it does normally when it reaches the kidney rudiment, forming first the major, and when these themselves divide, the minor calyces. Division may however take place prematurely, and we have various degrees of double ureter varying from both opening into the bladder by a common inlet to their union a little below the pelvis of the kidney. Division of the anlage may take place actually before the bud has formed, resulting in two ureters opening into the bladder separately. Cases of unilateral duplication of the ureter are well known; but cases of bilateral double ureter are rare and worthy of record. The following is such a case.

Mrs. A., aged 70, was admitted to hospital complaining of a blood-stained vaginal discharge which had lasted three months. Adenocarcinoma was revealed by curettage and complete hysterectomy and bilateral salpingo-oophorectomy was performed. Ten days after operation she developed acute cystitis, and this persisted for three weeks despite treatment. She then developed abdominal distension, became gradually weaker, and died.

Post mortem diffuse peritonitis was found, with areas of acute ulceration in the colon and lower rectum and an acute cystitis. In addition, there was a double ureter to each kidney, opening from their upper and lower parts (see Figure). On the right side the ureters opened separately into the bladder, the openings lying beside each other at the right end of the interureteric bar. On the

¹ Manson-Bahr, P.: THE LANCET, 1933, i., 1179.

left side the lower ureter opened into the bladder through an orifice at the normal site of the ureteric opening. The upper ureter opened into the urethra at its exit from the bladder and appeared to run through the fibres of the sphincter urethrae.



Drawing (semi-diagrammatic) to show the origins of the double ureters and their point of entry to the bladder.

This tube showed much dilatation, measuring 2 cm. in diameter at one part. It also showed evidence of inflammation of long standing, with fibrous thickening of its wall and periureteritis. The related upper half of the kidney was replaced by a thick sac containing a quantity of pus. Attached to the lower part of the sac were the remains of the left kidney which appeared quite normal and very well demarcated from the infected upper half. The ureter ran from it in a normal manner and crossed in front of the infected ureter a little above the pelvic brim.

The interesting features in this case are: (a) The bilateral double ureters which opened symmetrically into the bladder, the upper one on the left side opening into the urethra. This ureter could empty itself only when the sphincter urethrae was relaxed—i.e., during actual micturition. Hence it had become greatly distended and later infected, the kidney being ultimately replaced by a bag of pus lined by granulation tissue. (b) The sharp fibrous tissue demarcation between the upper and lower halves of the kidneys on either side is interesting. This was noted also by Legueu and Luque,¹ who concluded that these subjects should be considered as having four distinct kidneys although those on each side were welded together forming an apparently single kidney. Legueu demonstrated that their vessels were distinct. Luque, who diagnosed the condition during life by urography, showed that the fluid eliminated by each of the four ureters was quite different in quality and in chloride and urea content. This is interesting, for it means that if a diseased condition of the kidney tissue excreting into one of the four ureters be found clinically, the treatment need not be complete nephrectomy on that side but rather a heminephrectomy with excision only of the diseased half, leaving the blood-supply of the remaining half. It is noteworthy that the ureter which opens lowest in the bladder comes usually from the higher of the two halves of the kidney. (c) The patient lived to the age of 70, apparently without symptoms, although infection of the affected ureter and kidney had obviously been present for a long time.

My thanks are due to Prof. James Hendry for the clinical notes of this case and to Prof. J. Shaw Dunn for his help.

¹ Luque, T. M.; Urol. and Catan. Rev., 1932.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF OBSTETRICS AND GYNÆCOLOGY

At the meeting of this section held on Oct. 18th, with Dr. W. FLETCHER SHAW, the president, in the chair, the subject of discussion was the treatment of

Breech Presentations

with special reference to cases of extended legs and arms.

Dr. J. W. BURNS (Liverpool) opened the discussion by considering the complete or fully flexed breech. In most breech cases seen in hospital, he said, it was impossible to demonstrate the presence of any one of the aetiological factors given in works on obstetrics. He doubted whether the incidence of contracted pelvis was much greater in cases with this form of presentation than in vertex presentations; at least contracted pelvis—except in its more gross form—could not be regarded as a cause of breech presentation at 36 weeks. Certain abnormalities—for example, placenta previa and such conditions as hydrocephaly and anencephaly—should be eliminated before proceeding to version, since some of these abnormal conditions were more readily dealt with if the presentation remained a breech. Prophylactic external version carried considerable risk of separation of the placenta, and the danger was increased under anaesthesia, when too forcible manipulations were liable to be used; sometimes stillbirths resulted from this operation. Version should be performed not later

than the thirty-sixth week, if that could be managed and preferably without an anaesthetic; failure suggested extended legs, and in these cases failure was liable to occur even under anaesthesia. In the management of the first stage, in addition to the usual measures, Dr. Burns advocated the use of an abdominal belt as soon as labour commenced; a very efficient adjustable pattern devised by Sister Miller was used at the Liverpool Maternity Hospital. The uterus and abdomen should not be handled throughout the second stage for fear of encouraging separation of the placenta. It was not known at what stage of delivery the placenta ceased to function, but he believed the placental body left the uterine wall much sooner than was usually thought; in breech cases it ceased to supply oxygen to the infant from the moment the head was passing through the pelvic brim. As soon as the perineum was distended by the descent of the buttocks, the patient was placed in the cross-bed posture, with her legs in the lithotomy position, Clover's crutch being very useful. When the buttocks and feet were distending the vulva, the feet were secured and lifted over the perineum. When the umbilicus was born, a loop of the cord was pulled down and then left. Usually the scapulae were born spontaneously, or with the assistance of some traction on the trunk; if the flexed arms did not follow immediately, they could be hooked out with the fingers. Describing his method of delivering the head, Dr. Burns said he had the mother's buttocks well over the edge of the bed, and as soon as shoulders and arms were born, the child was allowed to hang from the vulva; the weight of its body acting through

the neck brought the suboccipital area of the skull in contact with the back of the symphysis if the head was above the brim, or the descending rami of the pubes if the head was in the pelvic cavity. The head was thus caused to rotate on its horizontal axis, so bringing the suboccipito-frontal diameter through the brim. The body-weight maintained the head in the position of flexion while in the pelvic cavity, and this flexion was maintained during delivery. The attendant should stand sideways to the patient's vulva, using only one hand to grip the legs; the traction should keep the child's neck taut, so preventing the occiput from receding into the pelvis. This traction was maintained and the child lifted upwards and outwards through 180°. If delay occurred, suprapubic pressure exerted by the operator's left hand to the head would bring about delivery. This method helped to eliminate undue haste, as the operator must wait until the suboccipital area of the foetal skull could be seen in the subpubic angle before delivery was attempted.

Dr. C. McINTOSH MARSHALL, after a short historical survey of the methods for delivering the buttocks, submitted some conclusions reached from the delivery of over 40 cases of primigravidae in which the legs of the foetus were extended along its abdomen. No infant under 5 lb. in weight was included in the series spoken of; in a number unsuccessful attempts at external version had been made. In only one case was labour induced, and in that the patient had gone beyond the expected date. The cases were studied especially in regard to (1) dilatation of the cervix, and (2) the descent of the buttocks. In emergency cases one careful examination was made for the purpose of determining the degree of roominess of the pelvis. Three important observations had emerged: (1) in 40 out of 42 cases, as a result of the use of the natural powers alone, the buttocks arrived completely on the perineum before either mother or her foetus showed any sign of distress; in some this occurred just as assistance was about to be offered. (2) In no case did the mother show signs of distress. (3) In no case was there distress when the foetus was issuing from the vulva. It was the perineum which offered the greatest resistance to the buttocks. Dr. Marshall declared that while early prophylactic bringing down of the legs might be an excellent method of treating these cases, it was unnecessary. Forty of the 42 cases were delivered with the legs in the fully extended position; all were alive at the moment of the birth of the buttocks. One infant was stillborn, the cause of the death remaining unexplained. Another died from laceration of meningeal septa; there was great difficulty in delivering the head through a contracted pelvis. The foetal mortality was 4.76 per cent. Dr. Marshall then exhibited a cinematograph film showing the delivery of four infants in the Liverpool Maternity Hospital.

Dr. DONALD ROY said his contribution described a routine evolved by the ward sisters and the ordinary hospital residents at the York Road Lying-in Hospital. During pregnancy external version was attempted at varying dates between the thirty-first and thirty-eighth weeks in all cases of breech presentation in primigravidae, and in many multiparæ too. Taking as a sample year 1930, external version was attempted in 59 cases—i.e., 29 primigravidae, 30 multiparæ—and in all but 3 (primigravidae) it was successful. If version failed, even under general anaesthesia, the cases were left either to go into labour at term as breech cases, or in some cases labour was induced, either prematurely, at 36 to 38 weeks, or at term.

In ten years 155 cases with breech complications were recorded, excluding very small premature infants, twin presentations, macerated children, foetal deformities, antepartum hæmorrhage, and version performed because of difficulties of labour. When labour occurred, the legs (which, in 63 per cent. of primigravidae and 41 per cent. of multiparæ were extended) were nearly always left to be born naturally, or, at most, flexed at the vulva when born to the knees. Seldom was any difficulty or delay experienced. The average duration of the second stage in these 155 cases was 1 hr. 54 mins. in primigravidae, and 48½ mins. in multiparæ. In 3 of the former and 1 of the latter groin traction was used, and in 2 the legs were brought down. Dr. Roy and his colleagues considered, as the result of experience, that the risk of trouble from extension of the legs when antenatal work was properly done had been grossly exaggerated. The important factor was the size of the child in relation to the size of the pelvis. Cases of impaction of breech could be avoided by early version or by the induction of premature labour. Both arms were extended in 53 per cent. of the primigravidae, and one arm in 9 per cent.; both arms were extended in 47 per cent. of the multiparæ, and one arm in 3 per cent. of them. In 43 out of 48 cases in primigravidae with extension of one or both arms, one or both had to be brought down. Extension of the arms was present and was the chief cause of difficulty in all the 11 cases of stillbirth from difficult labour. Dr. Roy considered that extension of the arms was the most important and dangerous complication of breech delivery, because of its frequency and the large proportion of cases in which help was needed. Delivery of the head was hastened by jaw and shoulder traction in 15 primigravidae and in 6 multiparæ, and by means of forceps in 1 primigravida. Summarising his results, he said that among 77 primigravidae there were 7 stillbirths and 1 neonatal death, a foetal mortality of 10.3 per cent. In 78 multiparæ there were 7 stillbirths, a foetal mortality of 8.9 per cent. There were no maternal deaths, and no cases of Caesarean section for breech presentation.

Mr. ALECK BOURNE said he had always felt that in a large number of the cases it was better to bring the legs down. Cases of impacted breech occurred due to extended legs, resulting in obstructed labour; there might also be extended arms. In a group of primigravidae with soft parts not easily dilated and with large babies, the legs would not come down when the os was fully dilated. By bringing them down early opportunity was given to bring the arms down by putting the hand a little higher. Sometimes he had slipped a loop of tape over the wrists to keep the arms down. If arms and legs were brought down at the same time, one of the chief causes of breech mortality was avoided. He seldom experienced trouble with delivery of the head. Rather than risk an impaction with obstruction he would bring legs down even when apparently unnecessary.

Mr. EARDLEY HOLLAND said he had been surprised to find that, as a result of a large number of post-mortem examinations on foetuses born dead as a consequence of breech labour, there was evidence of excessive cranial compression in 88 per cent., with tears of the tentorium and intracranial hæmorrhage. The teaching in his student days was that after the body of the foetus had been born it was imperative that the head should be delivered quickly, as otherwise the foetus would die of asphyxia following upon cord compression. Investigation had shown how erroneous was that teaching. When morphia and

scopolamine were used to relieve the pain of labour, it was found that the foetus could remain for as long as 20 minutes in a state of complete apnoea, and then breathe naturally. He had accordingly urged slow delivery of the head, and also perineotomy; insisting that the main problem was delivery of the foetal head in such a way as to obviate its compression. He did not think that external version was dangerous in the hands of the educated obstetrician. Provided the breech had not sunk into the pelvis, the first thing to do was to compress the foetus between head and breech, rolling it up like a hedgehog. He was against bringing down the legs as a regular practice; unless the foetus was very large, that was not usually necessary in multiparæ. If, after the breech had come down on to the pelvic floor, there was a delay of half an hour, he made it a rule to bring down the leg so as to steer clear of an impacted breech.

Mr. G. F. GIBBERD confessed to depression about the results in breech cases. Some said that in these cases the great difficulty was due to the arms, others feared the danger to the head. His view was that even if there was difficulty in delivering the arms while the head was easily delivered, there were three chances to one that at the autopsy intracranial hæmorrhage would be found. To lower the present mortality from this cause he could only suggest external version, which was not a dangerous procedure. In his own hospital, in 204 external versions the stillbirth-rate was 2 per cent. An occasional cause of death in the foetus was atelectasis; when the foetus was born, its head should be held lower than its feet; otherwise if fluid was present in the trachea it would enter the alveoli.

Dr. G. W. THEOBALD said that every obstetrician should have a constant technique. When once the breech came down to the outlet and the cervix was fully dilated, the patient should be anaesthetised and delivery carried out. He contended that it was wrong to bring down the anterior arm first; the posterior arm should receive first attention. If the operator placed one hand in the vagina, kept the head flexed, and pushed the head through from above, intracranial hæmorrhage would be avoided. That meant that the patient must be thoroughly anaesthetised; a half-anaesthetised woman was more difficult to deliver than one fully conscious. When the breech had been delivered it was important to squeeze the chest and to keep it constricted until the air-passages were cleared.

Dr. W. H. F. OXLEY said that in his long experience of general practice he had had a large number of breech deliveries. Many were impacted with extended legs, which had been left too long. His cases were looked after by midwives, not by doctors. In all primiparæ he brought the legs down; if this were not done as a regular procedure, one would not be able to bring down the legs in difficult cases without tearing the vagina. He always arranged to be called when the os was fully dilated. The legs having been brought down, the midwife located the child's head and pushed it down without traction. He did not pull on the trunk of the foetus. He had delivered over a thousand cases with extended legs in ten years, with good results.

Mr. A. J. WRIGLEY agreed that breech presentations should be regarded as a warning of other possible complications. At St. Thomas's the breech figures had definitely improved since the York Road technique, described by Dr. Roy, was introduced. Recently Dr. Marshall's methods had been adopted there, since when there had been no case of stillbirth nor of neonatal death.

Mr. J. D. S. FLEW spoke in favour of early version. In 600 cases of external version, of which 200 were between the thirtieth and thirty-fourth weeks, there was no instance of labour arising from the version.

Miss J. M. MOORE said that in 1934, at the Royal Free Hospital, breech cases in primigravidae numbered 26; only 4 responded to external version between the thirty-sixth and thirty-ninth weeks, and they were subsequently delivered as vertex cases. That was a poor result for version. In some the condition was not diagnosed until the patient went into labour, and in some others version was contra-indicated because of engagement of the breech, or because of toxæmia, and there was one case of primary thyrotoxicosis. Epiphysiotomy was done in 23 out of 30 cases. The stillbirth-rate was 2 per cent.; the gross mortality of neonatal and stillbirth cases was 16.6 per cent.

Prof. SCHILLER (Vienna) said that in his clinic much more attention was being paid to the condition of the foetal head than to that of asphyxia. A colleague of his had shown that asphyxia played no important part in causing death in the foetus. In 90 per cent. of the cases investigated, hæmorrhage in the tentorium could be proved, while the deaths from asphyxia did not number more than 2 to 3 per cent. In his institution pituitary extract was very frequently used; it was regarded as "pharmacological forceps." If any traction was considered necessary, it was exerted on the neck, not on the feet, and even this was not done until after the use of pituitary extract.

The PRESIDENT was surprised that no speaker had mentioned the practice of ironing out the vagina in order to ensure plenty of room there, a procedure stressed by Potter of Buffalo, who had one of the largest obstetric practices in the world.

Dr. BURNS, in reply, said he believed many babies were killed at the vulval orifice by injury to the base of the brain. In selecting the legs for traction he was anxious about the neck vertebrae; in his cases there was no evidence of injury to these. It was important in these matters to legislate for students and beginners, not for experts.

SECTION OF COMPARATIVE PATHOLOGY

A MEETING of this section was held on Oct. 23rd, when Prof. J. C. G. LEDINGHAM, F.R.S., gave his presidential address on the

Comparative Study of Clinically Allied Viruses: Some Unsolved Problems of Edward Jenner

He said that he proposed to consider the poek diseases with particular reference to the problems they present to the student of comparative pathology and fundamental virus research. Since Jenner made protection against small-pox possible great theoretical advances had been made, and we could now with fair certainty speak of and manipulate the actual virus agent; but the only advance which we could register in Jenner's sphere, an advance as yet only tentatively exploited, was the rendering of Jenner's prophylactic more æsthetic and acceptable by administration of the virus of vaccinia in its purest form freed entirely from associated organisms.

The origin of the practice of variolation was lost in antiquity but certainly went back a thousand years or more before the Christian era. Its discovery was doubtless the culmination of frequently and independently observed phenomena suggesting that small-pox was not likely to be contracted twice and

that infection entering the body through skin traumata ran a more benign course than that following natural infection. Small-pox came to Europe probably round about the sixteenth century and though variolation was held by some to have been independently discovered and secretly practised by peasants in various western countries, it was its importation from the east, largely through the efforts of Lady Mary Wortley Montagu, that brought the method into prominence in the eighteenth century. Fatal issues in the hands of capable inoculators were surprisingly small, possibly because the eastern ritual was adopted—insistence on spare diet, cooling drinks, and life in the open—for those inoculated. The recognised necessity of paying careful attention to the state of health of candidates for vaccination in modern times was indeed only a reflexion of an old-established eastern rule. The question whether any genuine lasting attenuation of the variola virus was achieved by the practice of variolation in human passage was of great interest. There seemed little doubt that certain inoculators who carefully selected their material only from primary vesicles obtained results approaching closely to those following vaccination. Secondary pocks might be either very few or absent. Were such human-passaged strains of variola available now, it would be of the greatest interest to determine how far, if at all, they might differ antigenically from the variola-vaccine derived by passage from man to other mammalian species. The problem was, in fact, whether the change from variola to the attenuated variant known as vaccinia could take place without transference to another host. Prof. Ledingham concluded his remarks on variolation by pointing out that it was an effective method of small-pox prevention, not without risk to the individual and the community, which was essentially a product of the deductive logic of independently reasoning beings in probably many isolated communities. In this country it had a long life and survived, though precariously, into Jennerian times. For all time it would occupy an outstanding place in the development of immunology as a way of forestalling a natural disease and robbing it of much of its power for harm.

The advent of Jenner and vaccination opened up an entirely new field of endeavour in which for the first time observation and experiment went hand in hand. Prof. Ledingham quoted effectively in the laboratory language of to-day the two cardinal experiments recorded in the famous *Enquiry* of 1798 on which rested Jenner's claim to immortal fame, and proceeded to discuss the nature of cow-pox—which was still abroad in the world—and what virtue it had that made it, as Jenner had experimentally demonstrated, an apparently effective prophylactic against human small-pox. This was a region of old and perhaps still smouldering controversy which could now be approached calmly, owing to the rise and gigantic development of the bacteriological era, with, of late, more than an inroad into the nature of those agents called viruses of which Jenner was the pioneer student. Jenner himself approached the problem by a study of the origin of cow-pox which he linked with a disease of horses known as the grease. Three clinical entities, the grease in the horse, the cow-pox of the cow, and the casual cow-pox in man, were, he found reason to believe, etiologically connected and strictly in this order of passage, infected matter being conveyed on the hands of farm attendants from the lesions on the horse's heels to the teats of cows, and thence to other milkers. Jenner had to abandon his idea

of the equine origin of cow-pox, but it was now quite clear how this idea arose. John Loy in 1801 showed that there were two kinds of grease, only one kind being communicable to man and cow. The grease that was communicable came from horses in which the local inflammatory condition of the heel was only part of a more general exanthem, while the non-infective grease might be any sort of banal inflammatory condition in the region of the heel. In recent years the grease had been shown definitely to be one of the local manifestations of horse-pox or contagious pustular stomatitis, and as horse-pox it took its place with cow-pox in a common problem still unsolved. Were these diseases *sui generis* or were they, wherever they might be found, due invariably to unwitting variolation or vaccination of the horse or cow by the hand of man? Current text-book opinion postulated for these diseases a purely extraneous origin—i.e., they were held always to be man-induced, but Prof. Ledingham had never been satisfied with the evidence supporting this view. He pointed out that the direct variolation of the cow was not easy; it had long been attempted without success, though eventually by direct or indirect means and artifices such as the use of intermediary animals like the monkey and rabbit it was achieved, a new source of vaccine lymph became available and recourse to casual cow-pox was rendered unnecessary. Prof. Ledingham spoke briefly of the efforts made by himself and his colleagues at various times in recent years to secure a vaccinia-like variant from variola of the alastrim type in this country, by rabbit passage alone or monkey passage followed by rabbit passage, and of the light shed by these efforts on adaptation problems. Doubtless the question of virus adaptation would have to be studied on the lines so profitably employed in recent years in connexion with bacterial variation. The fact that human variola could, though with difficulty, be made to yield a variant pathogenically similar to fully adapted cow-pox, and like it capable of conferring immunity to small-pox, had been one of the strong arguments in support of the view that cow-pox was not an independent clinical entity and the result had been to ignore cow-pox as a mere side issue. But cow-pox could not be ignored or forgotten, for it was still with us; in quite recent years reports had been received of cow-pox prevalence in Austria and in Holland.

According to Dr. Kaiser, of the Vienna Lymph Station, there was now as in the past great difficulty in getting information about cow-pox, since farmers feared to declare its existence lest the sale of their milk should be prejudiced. It was only when the milkers contracted troublesome vaccinal lesions on their hands and arms that attention was drawn to the underlying cause. These lesions were of interest from two points of view. Though the commoner ones were vaccinal in type, there occurred also hard chronic cherry-red nodes which would seem to have an entirely different aetiology and were possibly to be related to the peculiar paravaccinia lesions described by Pirquet in 1915 as occurring particularly in revaccinations and believed by him to be due to an entirely independent virus. The point of interest in the milkers' lesions of the frankly vaccinal type was the fact of their occurrence in vaccinated persons. It was noteworthy that neither Kaiser in Austria nor Frenkel in Holland was able to assign a possible origin of any of these recent outbreaks of cow-pox in recent human vaccination. In spite of his absolutely negative findings in this respect Frenkel still expressed his adherence to the

belief that most cases of natural cow-pox are due to infection from newly vaccinated men. It would almost seem that there was a sort of conspiracy to bolster up the conventional view that cow-pox is not a disease *sui generis*. Personally Prof. Ledingham considered the matter entirely non-proven and so far as the epidemiological and circumstantial evidence in support of the secondary origin was concerned, it seemed to him extremely weak. That cows and horses could be variolated with difficulty or vaccinated with ease could not be used as a strong argument against the spontaneous origin of horse-pox and cow-pox if the circumstantial evidence was faulty, and it was here that he suggested tentatively a way out of the impasse. The mere fact that variola, cow-pox, and horse-pox could be made to throw off a type of variant possessing apparently similar properties—in fact, a sort of least common denominator which was designated *vaccinia*—in no way indicated identity of constituent antigen in the serological sense. The methods so far applied to the determination of affinities between clinically allied viruses, such as cross-protection or mutual neutralisation of response with the corresponding antiviral sera, could at the best afford evidence only of some definite community of antigen. On this basis variola, cow-pox, and horse-pox would be closely related, but Prof. Ledingham considered the experimental evidence supporting affinities between variola-vaccine on the one hand and sheep-pox and fowl-pox on the other to be far from satisfactory. He had no experience of sheep-pox, but so far as fowl-pox was concerned his own work yielded no evidence whatever of cross-protection between *vaccinia* and this disease of the fowl. It was possible that antiviral serum, which was largely used in work of this kind, might bring to light only broad affinities between virus antigens, whereas immune sera prepared from the pure elementary bodies of these pox diseases and used in agglutination and agglutinin-absorption techniques might yield much finer distinctions. The time was ripe for a great extension of this kind of work in elucidating affinities between viruses.

In conclusion Prof. Ledingham referred to the overwhelming advantage possessed by the comparative pathologist of the present day over the pioneers of a century ago in his armamentarium for the application of the experimental method. Supporting that armamentarium was the lore of the cell and the completely new outlook given by the development of bacteriology. These helps the pioneers had to do without, but could it be said that their work suffered very greatly in its intrinsic value on this account? Prof. Ledingham thought not. When one read, for example, the masterly clinical studies of an infectious disease by men of the standing of Robert Ceely one could not fail to be deeply impressed by their highly cultivated powers of observation, their capacity for reasoning from clinical premisses, and by the leisurely preparation of their published work in English undefiled. He sometimes felt that the very facility of the experimental method in these modern times was too often reflected in the premature publication of undigested or misinterpreted experiment. On the other hand, too often the morbid anatomist and histologist failed to realise how necessary it was for him to apply the experimental method wherever possible if his work was to interest a generation that craves for experimental demonstration. The experimental pathologist could usually be recognised from his methods of attack on problems and an outlook that came from constantly realising

and satisfying the widest implications of experiment. He quoted for their encouragement some words written by Robert Ceely, surgeon to the Buckinghamshire Infirmary, in the year 1842. "The knowledge of the diseases of animals, when it becomes more advanced, will contribute to diffuse new light on the diseases of man and perhaps bring to perfection methods of cure and prevention owing to the facility of multiplying on the inferior animals experiments which we cannot attempt in man. In the department of comparative pathology comprehending the exanthemata much remains to be accomplished, notwithstanding its diligent and successful cultivation in some parts of the continent since the time of Jenner. What has hitherto been effected there cannot suffice, however, to supersede, much less to paralyse, the efforts of his countrymen. But they must arouse themselves and no longer exhibit a practical indifference to the researches to which he so successfully devoted the energies of his great mind." They could, he thought, at a century's distance from Ceely's time, truthfully and thankfully say that the edifice whose foundation was laid by Jenner was still in the hands of the decorators.

SECTION OF NEUROLOGY

Dr. F. G. GOLLA in a presidential address delivered to this section on Oct. 17th on the

Nervous System and the Organic Whole

emphasised the necessity for a much more comprehensive view of nervous activity than that afforded by physiology. He pointed out that mechanical conceptions of nervous function are applicable to macroscopic entities alone and that the micro-mechanics of pure physics cannot be used in the elucidation of organic activity. Since the reflex studied in isolation is a physiological abstraction, he argued that attempts to account for nervous activity in terms of reflex integration are fallacious; that the unit of function, if it can be differentiated, is not the reflex arc but a mechanism which is governed by the sum of the resultant stresses of the rest of the nervous system. He defined the nervous system not as a passive organism only responding to changes in the internal and external environment but as exhibiting in itself a state of autogenous activity. If it was to be regarded as a mechanism it was one that acts as a whole, whose activity is autogenous but modified by the totality of the environment, whose lability is very great but still directed as a whole towards certain modes of reaction. Dr. Golla pointed out that the nervous system considered apart from its history was an abstraction; every existing object whether at rest or motion is a strand of history with some duration. Activity whether considered in relation to the nervous system or its environment could never be recapitulated. Again, no account of the nervous system could be other than an abstraction that did not envisage its relation to mental events. Theories of the relation of mind to body were not discussed by Dr. Golla, but all arguments were, he said, based on the brute fact, verifiable by the evidence of normal and pathological psychology, that mental events are invariably accompanied by related nervous events. Since we are aware of purpose in initiating and continuing certain chains of activity he argued that some physical correlate of purposive direction must accompany the corresponding nervous function. A teleological activity was thus postulated for nervous activity

from considerations based on the holistic view of nervous function. The objections to teleological theories in science were also dealt with by Dr. Golla; as he pointed out, the views he advanced were distinguished from the old teleology in that final causes were not contemplated. The orientation of the total activity of the organism was not determined by finality. He claimed that the views advanced would, by considering nervous function in relation to the organic whole, make intelligible many forms of nervous activity which, considered by themselves, are meaningless.

SECTION OF MEDICINE

At a meeting of this section held on Oct. 22nd the chair was taken by Sir CHARLTON BRISCOE, the president, and Dr. ARNOLD STOTT opened a discussion on the

Recognition of Myocardial Deficiency

He said that increasing attention was being paid to the myocardium in gauging the severity of heart disease and in prognosis. The aetiology of chronic heart disease should be determined at the outset of every case. The commonest cause was rheumatism (32 per cent.), closely followed by hypertension (30 per cent.) and arterio-sclerosis (25 per cent.). Rare causes were syphilis (4 per cent.) and thyrotoxicosis (3 per cent.). Rheumatic infection was practically the only cause under the age of 30, and it appeared as chronic valvular disease, especially of the mitral valve, with some enlargement and, in most cases, eventual auricular fibrillation and congestive heart failure. Syphilis usually started as aortitis spreading to the aortic valve, followed by gross enlargement of the left ventricle. Often there was obstruction of a coronary artery with angina or infarct. Rarely there was a diffuse syphilitic myocarditis or gumma producing heart block. Hypertensive heart disease was important in later life and usually of the "essential" type, though in about 5 per cent. of cases it followed chronic nephritis. There was a varying degree of enlargement, and congestive heart failure was a common ending. Arterio-sclerotic heart disease was recognised by angina pectoris or infarction from coronary thrombosis. Angina might be present without other signs of cardiac disease. Thyrotoxic heart disease was characterised by palpitation and dyspnoea, and later by auricular fibrillation terminating in congestive heart failure. The eye signs and thyroid enlargement might be very slight. Surgical treatment was often successful. Certain symptoms helped in the recognition of all these types. Dyspnoea was the most important, appearing on a degree of exertion not previously causing distress, and resulting from an insufficient output of aerated blood to the respiratory centre. It was progressive to orthopnoea, and was invariably present in those types in which congestive heart failure eventually appeared. An entirely different dyspnoea was cardiac asthma, a sure sign of severe myocardial disease; this occurred in paroxysms, usually during sleep, and was believed to be due to sudden left ventricular weakness causing engorgement of the lungs. It was common in hypertension and might be the first symptom. Cheyne-Stokes breathing was often present in the later stages of grave myocardial disease. Anginal pain was not usually agonising or associated with a "sense of dissolution," and was too often labelled indigestion. It was particularly noticeable on hurrying

after a meal, and was often accompanied by aerophagy.

The most important physical sign of myocardial deficiency was enlargement, which was not only a response to increased work. The simplest clinical method of estimating it was the position of the apex-beat. Radiology was a great help in determining this, but percussion was crude and seldom of much use. Diastolic murmurs were more important than systolic and involved a strain on the heart; but the heart had enormous reserve power and the significance of valvular disease lay in the likelihood of simultaneous damage to valves and myocardium. Pulsus alternans and gallop rhythm were signs of grave damage, as were also persistent auricular fibrillation, auricular flutter, and complete heart block. Paroxysms of tachycardia were functional disturbances not necessarily resulting from myocardial damage. Signs of overfilling of the venous system should be sought in cases of dyspnoea or suspected heart disease; the tell-tale jugular veins should never be overlooked. Slight distension in the recumbent position might be a valuable early sign.

Thymias, tachycardia, and certain signs unobtainable by other means; in some cases it brought certainty where the diagnosis would otherwise be in doubt; but it seldom gave more than confirmatory evidence of myocardial disease. The most valuable diagnostic points were dyspnoea, pain, enlargement, certain murmurs and disorders of rhythm, and the evidence of overfilling of the venous system.

THE CHIEF DIFFICULTIES IN DIAGNOSIS

Dr. D. EVAN BEDFORD said that the detection of hypertensive cardiac disease depended largely on symptoms. The common error was not so much to overlook myocardial disease as to diagnose it when it was not there. Dyspnoea might simulate it in cases of emphysema. A barrel-shaped chest was not important in emphysema but restricted expansion of the lung was, and radioecopy was a great help. Secondary changes in the heart occurred in a few cases, but actual heart failure was very rare and almost invariably accompanied by obliterative changes in the pulmonary vessels. Pulmonary fibrosis might closely simulate the dyspnoea of heart disease, as might also cancer of the bronchus, which was a not uncommon cause of severe dyspnoea. Diffuse secondary carcinomatosis might cause fine fibrosis with pronounced dyspnoea and perhaps persistent tachycardia—apparently reflex—but few physical signs. Mediastinal tumours sometimes caused difficulty as in the early stages they might only be recognisable by X rays. Intrathoracic goitre was an important cause of dyspnoea, tachycardia, and heart failure. A rare cause was obliterative pulmonary endarteritis. Nervous dyspnoea was often attributed to the heart; it was associated with a peculiar sensation of air-hunger and sighing respiration. Abdominal obesity was a common cause of severe dyspnoea, as it elevated the diaphragm. Full radiological and other investigations were necessary for the diagnosis of myocardial disease. Left mammary pain was often put down to heart disease. It was a dull ache radiating to the angle of the left scapula or down the left arm. Radiation down the right arm was rare in this nervous type and was therefore of greater diagnostic aid in angina than radiation down the left arm. Pain in the breast

should never suggest heart disease. Aneurysm, sub-sternal goitre, and mediastinal tumour might cause pain but were revealed by radiographic examination. Para-oesophageal hernia was a rare cause of angina-like pain. Syncope was not a common symptom in myocardial disease. Faints beginning in middle life suggested cerebral rather than cardiac disease. Vaso-vagal attacks might be alarming and cause diagnostic difficulties, but the history and perfect recovery between attacks were diagnostic. Tachycardia alone was not a reliable evidence of myocardial disease; nor were extrasystoles. Ventricular paroxysmal tachycardia was of more serious omen than other types. Auricular fibrillation or flutter usually indicated myocardial disease, but oedema was only evidence if associated with other signs such as filling of the cervical veins. Exhaustion and giddiness should not suggest heart disease. Systolic murmurs and alterations in the first sound were of little help. Myocardial disease should never be diagnosed on heart sounds alone, with the possible exception of gallop rhythm.

Systematic investigation must be made to discover the cause in every case. A routine Wassermann was of advantage, especially if there was cardiac pain, and X rays of the aorta were useful. The condition of the aorta was a very good indication of the condition of the coronary arteries. Coronary disease was recognised largely by exclusion; almost all patients had had pain or dyspnoea before mortal syncope occurred. The electrocardiogram was of great value in confirming the diagnosis. Chronic constrictive pericarditis was a rare cause of heart disease.

FATTY INFILTRATION

Dr. A. G. GIBSON said that fatty infiltration was a factor which might be found in minor degrees at all ages and not only in the obese. The wall might be almost wholly replaced by fat, and fat might be found under the endocardium in severe cases. Muscle bundles were pushed away. These cases did not generally come to the cardiologist or physician. In 300 routine post-mortem examinations there had been 116 (38 per cent.) cases of fatty infiltration. In life the patients had shown irrelevant disorders (gastric, cerebral, and renal) in 42 per cent. Death had been sudden and unexpected in 13.7 per cent.; reduced to 10.3 per cent. if four cases of ischæmic necrosis were excluded. There had been five anæsthetic deaths, and other cases of sudden unexpected death, some before and others after operation (15.7 per cent. followed operation). In a group of cases (18.9 per cent.) fatty infiltration had been associated with accident, and in 8.6 per cent. there had been heart disease as well. One patient who had died suddenly had been attended regularly for "myocarditis," but there had been no post-mortem cardiac lesion other than fatty infiltration. This condition added a factor of stress when there was a heart strain such as operation or accident, and might cause signs of heart failure.

DISCUSSION

Dr. B. T. PARSONS-SMITH thought that the back-pressure theory of heart failure was rather discredited nowadays in favour of the diminished output theory. Recent work had shown that the failing heart had only a very slightly diminished output, and the back-pressure theory was worthy of consideration. Congestion of the lungs might play some part in dyspnoea. Reflex impulses from lungs, heart, and muscles might also be important. The blood in early heart

failure showed no deficiency of oxygen and no increased acidity or carbon dioxide content.

Dr. LOEWY (Vienna) said that if a sample of blood were taken from a dyspnoic patient and compared with the normal it would always show a much darker colour if emphysema were present. This was a useful test for the exclusion of emphysema as a cause of dyspnoea.

Dr. K. HARRIS thought the risk of diagnosing angina in cases of indigestion was greater than the converse. He inquired the importance of the T wave in myocardial degeneration.

The PRESIDENT said that two symptoms were of importance: unexpected fainting in an elderly patient, and sallowness. A number of organs had a direct inhibitory effect on the tone and level of the diaphragm and caused excessive movement of the chest of which the patient was very conscious. The stomach had this effect, as had also the heart and the gall-bladder. A contrary effect was produced by distension of the colon, which lowered the diaphragm. There was an alteration in the outline of the chest and upon this depended the pains found in these conditions.

Dr. SHIRLEY SMITH mentioned the significance of a new appearance in late life of any symptoms which might suggest the cardiovascular system. Anginal pain often had a relationship to food, but nervous left-mammary pain had not.

Dr. H. S. STANNUS spoke of the frequency of certificates of "cardiac debility" and wondered if these cases were all anxiety neurosis, and mentioned the frequency of heart symptoms in gall-bladder disease.

Dr. STOTT, in reply, said he was quite unfamiliar with the appearance of fatty infiltration in cases of sudden death. He did not regard a diminished output of oxygenated blood as the sole cause of dyspnoea, which was not a simple question. The sallowness mentioned by the President was especially associated with coronary disease and was very difficult to explain.

Dr. BEDFORD, also in reply, thought it was unscientific to base prognosis on inversion of the T wave or any other single finding. Only experience could teach when to rely largely on the electrocardiogram, which should in any case be regarded as a diagnostic rather than a prognostic instrument. Faints first appearing in middle or later life were serious, but for the brain rather than the heart, he thought. Influenza did not lead to cardiac disease but rather to disturbances of the autonomic nervous system.

Dr. GIBSON, replying to Dr. Stannus, commented that surgeons regarded gall-bladder cases as especially liable to heart complications, and fatty infiltration was often found in gall-stone cases.

NEW SUN RAY CLINIC AT BEDLINGTON. — Mr. Godfrey Nicholson, M.P., on Oct. 12th declared open a new sun ray clinic and child welfare and maternity centre at Bedlington, Northumberland. The centre is a fine single-story building, and in the sun ray department equipment of the latest type is installed.

ROYAL HAMPSHIRE COUNTY HOSPITAL. — This institution has launched an appeal for £30,000 to commemorate the bicentenary of its establishment. Said to be the first hospital to be supported by voluntary contributions set up outside London, it was founded in 1736. In 1865 larger accommodation was required and the present site of the institution was selected by Florence Nightingale who personally supervised the planning.

REVIEWS AND NOTICES OF BOOKS

Injury and Incapacity

With special reference to Industrial Insurance.
By H. ERNEST GRIFFITHS, M.S. Lond., F.R.C.S.,
Surgeon, Albert Dock Hospital. London: Baillière,
Tindall and Cox. 1935. Pp. 270. 12s. 6d.

In the preface to this useful work Mr. Griffiths comments on the remarkable differences of opinion expressed in the law courts by medical witnesses asked to give a prognosis in cases of injury. It is of interest that the hospital surgeon generally gives a much more favourable prognosis than the patient's panel doctor. This does not necessarily represent any real divergence of view, but only means that the surgeon bases his prognosis on the length of time before the patient will be discharged from hospital, while the panel doctor estimates the period during which he will have to give certificates that the patient is still unfit for work. In order to arrive at a basis of prognosis for each disability discussed in this book Mr. Griffiths deemed it necessary to trace the history of a large number of cases from the date of injury to the time of resumption of full work. He was reluctant to use hospital figures on the grounds that the records of any one hospital must depend on the type of work in the neighbourhood, and also upon the skill of individual surgeons. It was therefore decided to obtain the figures through an insurance company, and by the courtesy of one of the largest companies in this country, which deals mainly with claims arising out of the Workmen's Compensation Acts, facilities were provided for analysis of 50,000 consecutive cases of accidents. After the first 10,000 of these had been analysed it was found that a sufficient number of certain injuries had been obtained, but where there was any doubt the whole series was investigated. For example, no cases of cut finger were examined after the first 10,000, but every fracture occurring in the whole group was tabulated. In addition to this analysis Mr. Griffiths has been able to utilise his own large experience in the treatment of injured workmen and in the determination of their working capacity. From a study of these records he has drawn up tables of average periods of incapacity for both heavy and light work consequent upon various injuries.

The main part of the book is divided into twelve chapters dealing in turn with disabilities resulting from injuries to the head, chest, back, abdomen; from fractures of the upper and the lower limb; from injuries to nerves and muscles; and from dislocation and diseases of the joints of the upper and the lower limb. The last two chapters concern amputations and miscellaneous injuries. The second part of the book is perhaps even more valuable. Here are described the maximum degrees of disability compatible with efficient work in twenty-four skilled and unskilled occupations. It is interesting to learn, for example, that shortening of the forearm or an inability to rotate it more than 15° in either direction constitutes no disability in a navvy, and that a lorry driver may still be looked upon as fully effective despite flat-foot or a left-footed Syme's amputation. An index of occupations follows which indicates the type to which each class of work belongs, and is the more useful because it contains many crafts which will be unfamiliar to most doctors—for instance, on the first page alone, aerographers, back-tenters, backwash minders, greasy birlers, and Berlin blackers.

The index is occasionally inaccurate and in the chapter on spinal injuries no mention is made of spondylolisthesis, although trauma must frequently be a factor in producing this condition. Otherwise the book defies criticism. It is simply and lucidly written, and should be as comprehensible to the intelligent layman as to the doctor. Everyone who has to deal with that distressingly prevalent malady "compensitis" should have this book at hand for reference.

Textbook of General Bacteriology

Eleventh edition. By EDWIN O. JORDAN, Ph.D.,
Professor of Bacteriology in the University of
Chicago and in Rush Medical College. London and
Philadelphia: W. B. Saunders Co., Ltd. 1935.
Pp. 825. 25s.

THIS book has found a niche of its own among the better text-books on bacteriology. It contains an adequate but not too detailed account of medical and public health bacteriology written from a broader point of view than are most medical text-books on the subject; thus there are excellent chapters on the nitrogen cycle in nature, on bacteria in the industries, and on bacteria in connexion with plant diseases. These chapters are very useful, since they arouse in the medical student an interest in the more general problems of microbiology. The broad outlook of the work also makes it one of the best of introductions to medical bacteriology for students of agriculture and kindred subjects who have already approached bacteriology from their own point of view. The new edition has been brought well up to date; among the revised chapters that on food poisoning is particularly good.

A Complete Physics

Written for London medical students and general use. By W. H. WHITE, M.A., B.Sc., Senior of the
Lecturers and Examiners in Physics in the Medical
Schools of London. London: Richard Clay and
Sons, Ltd. 1935. Pp. 848. 15s.

THIS is indeed a remarkably complete text-book on physics for medical students. It covers 848 pages, contains 420 diagrams, and is interspersed with 1000 examination questions. A study of the index will convince the reader that no part of physics is neglected. But the author puts a question just before the list of contents: "Behold, there were very many . . . and lo, they were very dry. Can these bones live?" They can indeed and they do. Besides being comprehensive this is a lively book, full of sound information leavened by good fun and even wit.

Apart from the general excellence of the text the book has another source of attraction—the affectionate regard manifested by the author for the struggling student. This is exemplified in the three-page valedictory on the subject of examinations:—

"Some of you can't help being nervous; so far as we are concerned there is no cause for it, what we cannot allay we try to allow for: the awful divinity that doth hedge a visiting school examiner we have outgrown: we be your elder brethren, glad enough to welcome youngsters into the family, only putting back those who, as yet, have over-estimated the natural gifts of their youth . . ."

The text ends with a Frater Vale, and a photograph exhibiting the bright humour of an author who is certainly serving youth well by this book.

THE LANCET

LONDON: SATURDAY, OCTOBER 26, 1935

THE PREVENTIVE OUTLOOK

Dr. W. G. SAVAGE in his presidential address last week to the Society of Medical Officers of Health criticised some present tendencies in the public health service. It was more than thirty years ago that he joined that service because he believed in preventive medicine, and he was, he said, still the true believer from whom criticism comes best. The work of the M.O.H. was less interesting and less stimulating than it was before the war, and it was likely to become even less so. In the larger areas the medical officer of health would soon be forced to be almost entirely an administrator, a master of experts in all subjects but expert in nothing himself. This tendency had been accentuated by the Local Government Act of 1929, by which the medical officer of health became an administrator of beds, largely occupied by the end-products of disease, and a supervisor of defectives—in a word, “largely enmeshed in functions which are not our proper business.” He would not go so far as the late Dr. F. E. WYNNÉ did in 1922 when he wrote of “the wrong turning” in public health, but they were being induced and officially directed to squander energies by incursions into side roads, progress to the real goal being deplorably slow. It may be interpolated here that the Ministry of Health is party to a wide liberty in the way the annual reports of medical officers of health are drawn up. In a circular just issued, while it is stated in general terms that the report for 1935 should be limited to a record of alterations, improvements, or developments which have taken place during the year, specific request is made for an account of any noteworthy conditions prejudicial to the health of the area which have not been adequately dealt with in previous special reports, and it is open to the medical officer to discuss in any report a special subject of importance to the health of his area.

The law as it affects public health is at the moment in a state of flux, for, as indicated on another page, the codification of enactments under which the medical officer of health does his work has been completed and there is no reason why a new Act should not soon be placed on the statute book which will facilitate reference and help to lubricate progress. One of the chief difficulties in putting preventive medicine into practice is the inflexibility of the law. It was, Dr.

SAVAGE said, often made a ground of reproach that the findings of science were not more quickly applicable to public health practice, that the lag period between ascertainment and enforcement was too long. He himself holds the opposite view, believing that as laws are now made the tendency is to apply findings before it is known that they are really applicable. Of this he gave a striking example: vast sums had been spent on isolation hospitals which would never have been spent in that form if our present knowledge had been available. But the law is the law, and a vested interest springs up around it with a strong bias to perpetuate what exists. While hypotheses are the breath of life to science, no scientist would go to the stake for a hypothesis; and while welcoming the practice of making innovations in public health permissible and adoptive, Dr. SAVAGE would only have this done where the findings can be studied and tested in a spirit of research. Adequate scientific controls, that was the urgent need in public health work to-day, and that, he said, means an adequate staff. Long overdue is the detailed study of morbidity; we require statistics of diseases as much as we need statistics of mortality. Dr. SAVAGE looks for a wide extension of compulsory notification in selected areas under controlled conditions, so that we can learn something about their distribution, age onset, incidence upon various sections of the community, and relation to other morbid factors. What do we know of disease that only death-rates know?

More time to think and more knowledge to oil our thinking brought Dr. SAVAGE to the question of skilled lay assistance to preclude the medical officer of health from wasting his time on problems for which he was never trained. Lay administration had its own dangers, the chief being inelasticity. But if to his other training the medical officer of health added a training in scientific administration he should be able to shed much of his present burden of pure administration and turn to more significant matters. There was dissatisfaction too among the younger men who had entered the service hopefully but had found their actual duties bore little relationship to the larger problems of public health. So many routine examinations, so many processions of children for whom they could only give advice and not treatment. Every service required constant revision; with adequately trained infant visitors most of the work now done at the centres could be done in the homes, while much of the school inspection and maternal welfare should be transferred to the private practitioner. This would serve to shorten the long disheartening road from the D.P.H. to the M.O.H. Developments along these lines should increase the interest of the work of the junior members of the service and help to preserve that freshness of outlook which would counteract the tendency of the senior members to sink into ruts. The thread running through Dr. SAVAGE'S whole discourse was insistence upon the fluid and dynamic nature of the health officer's work and its preventive outlook.

TUBERCULOUS MENINGITIS

SEVERAL of the more obvious problems of tuberculosis of the nervous system remain unsolved. Conspicuous among them is the relation of tuberculous meningitis—the predominant clinical manifestation—to miliary tubercle and to the focal deposits which attract less attention during life but are more easily demonstrable post mortem. Two years ago we reviewed this subject¹ with particular reference to the work of V. P. JOUKOVSKY and V. N. ROUSSIKH, and the varied types of focal lesion they demonstrated in the nervous system. Since then there have been many further contributions and some of the writers have exposed new aspects of old problems. It is noticeable that of late investigation has been directed as much to adults as to children; and in at least two directions some advance seems to have been made—on the pathogenesis of tuberculous meningitis and on the possibility of recovery from it. But inquiry along these lines has brought into prominence a difficulty which has been insufficiently appreciated—the difficulty of making a certain diagnosis during life.

During the present year studies on cerebral tuberculosis in children have been reported by BLACKLOCK and GRIFFIN² in this country and by MORRIS SIEGEL³ in the United States. The former tabulate the post-mortem findings in 241 children, and it is particularly interesting to read the account of 45 cases in which tubercle bacilli were isolated from the cerebro-spinal fluid during the illness. In all but one of these meningitis was found; in eight it was associated with tuberculomata. But the single case in which general miliary tubercle and tuberculomata were unaccompanied by meningitis is of no little significance, for the signs and symptoms had led to a diagnosis of meningitis, and the fluid had been lethal to the guinea-pig. As BLACKLOCK and GRIFFIN suggest, some reported cases of recovery may well have been of this kind. In reviewing the subject of pathogenesis SIEGEL endeavours to correlate the results of animal experiment with those of clinical and pathological observation. The consistent failure of attempts to produce meningitis in animals by any means other than subarachnoid inoculation suggests that bacillæmia is not the immediate cause of meningitis—a conclusion in accordance with the findings in very young infants (1-2 months). In early infancy general miliary tuberculosis is found, but never meningitis, and seldom macroscopic tubercles; the child dies of toxæmia before cerebral foci have had time to develop. At a slightly later age a few isolated tubercles may be found in the brain and meninges, and meningitis may also occur. The delay in the appearance of meningitis is attributed to “the difficulty of getting enough free bacilli into the intermeningeal spaces.” It seems probable that infection of the

blood stream produces at first only isolated tubercles, as asserted by RICH and MCCORDOCK. On the other hand meningitis may undoubtedly arise by extension from isolated foci in the absence of general miliary tuberculosis. In a detailed account of their researches in France BOQUET and BROCA⁴ confirm some of these observations. They found that meningitis was easily produced in rabbits by subarachnoid inoculation not only with active tubercle bacilli, but with BCG or killed bacilli. After intravenous injection organisms could be obtained from the brain, but meningitis never developed.

Also in France, ROGER⁵ draws attention to certain characteristics of tuberculous meningitis in adults in whom, he says, the convulsive element is absent and the morbid process more localised but less typically basal. In a careful description of the symptomatology in adults he lays special emphasis on the subacute course and on the frequency of psychic disturbances which may complicate the diagnosis. He is convinced that treatment by Jousset's “allergine” has achieved success and is worthy of trial. ALLAN WALKER,⁶ of Sydney, brings out the fact that in adults meningitis is by no means always a manifestation of general miliary tuberculosis. Tubercles are always to be found, but are not a prominent feature of the pathology. Most characteristic are the highly gelatinous exudate and “a tendency to necrotic change of slight but definite degree, a tissue spoiling which is probably not wholly dependent upon vascular change.” WALKER draws an interesting analogy between these processes and “epituberculous” pulmonary affections. He suggests that the course of the disease is divisible into three stages: first, blood insemination with tubercle-formation; secondly, sub-pial infection; and lastly, massive meningeal infection with formation of exudate and local softening. Such cases as recover have probably not reached the third of these stages.

The question of recovery from tuberculous meningitis is intimately related to that of pathogenesis. HOBSON⁷ in our own columns recently described the case of a man of 24 who had signs suggestive of tuberculoma of the posterior fossa; in addition there were neck rigidity, fever, and vomiting, and tubercle bacilli were found on three occasions in the cerebro-spinal fluid; yet within four months he had made a complete recovery, and he was in good health five months after discharge. HOBSON suggests that a pure tuberculous meningitis had been present, but was localised to the posterior fossa. Like the work already mentioned his case record shows the difficulty of interpreting apparent recovery from tuberculous meningitis. What exactly has the patient recovered from? Are there any means of deciding conclusively during life that a person is suffering from true tuberculous meningitis? Clinical observation cannot establish the diagnosis;

¹ THE LANCET, 1933, II., 192.

² Blacklock, J. W. S., and Griffin, Mary: Jour. Path. and Bact., May, 1935, p. 489.

³ Siegel, M.: Amer. Jour. Tuberc., August, 1935, p. 196.

⁴ Boquet, A., and Broca, R.: Ann. de l'Inst. Pasteur, July, 1935, p. 8.

⁵ Roger, H.: Paris méd., 1934, II., 177.

⁶ Walker, A. S.: Med. Jour. Australia, 1935, I., 40.

⁷ Hobson, F. G.: THE LANCET, 1935, I., 933.

it can only detect the signs of meningeal irritation. The physician relies for confirmation on certain changes in the cerebro-spinal fluid, and it may be that the interpretation of these changes needs reconsideration. In BLACKLOCK and GRIFFIN's case to which we have referred the fluid showed "a low count of cells, chiefly lymphocytes, and a positive Pandey reaction," and was lethal to the guinea-pig; unfortunately no mention is made of the chlorides. It came to autopsy, but no meningitis was present. In HOBSON's case the diagnosis of meningitis was undoubtedly justified according to the customary criteria. In the fluid both polymorph and lymphocytic cells were present, though the count is not given; the chlorides fell on one occasion to 550. We are left with the salient fact that of cases in which the cerebro-spinal fluid shows changes like these an overwhelming majority are rapidly fatal. It remains to be discovered what circumstances account for the few fortunate exceptions.

THE ASSESSMENT OF NUTRITION

THE decision of the Health Organisation of the League of Nations to continue and develop its investigation of nutritional problems renders it doubly urgent to define what malnutrition is. Our own Board of Education, as is noted in another section of this issue (p. 968), relies on the impression of the school doctors, which leaves room for wide divergence of opinion. No index of nutrition has met with general acceptance. In most indices—and their name is now legion—weight has been one of the factors employed, while many other measurements—height, body circumference, thickness of the abdominal fold—have been used in the search for a constant to indicate the same state of nutrition at different ages and heights. The simple index, height divided by weight, has been replaced by the weight divided by the square or the cube of the height, and in fact all varieties of multiples, divisions, and additions have been propounded. These more sophisticated constants, however, appear to have very little in their favour, since it has been shown that the simple ratio, W/H , is just as highly correlated with the assessments of nutritional status by experienced clinicians as are the more elaborate ratios, W/H^2 for example, at least at ages under 5.¹ On the other hand it can be argued that any index comprising weight as the main factor is unsatisfactory. Heavy children may derive their weight from a large frame which is, in fact, inadequately covered, while light-weight children may be well-nourished and owe their low position on the scale to a smaller frame. In an attempt to avoid such difficulties RAYMOND FRANZEN and GEORGE T. PALMER, working for the American Child Health Association, introduced last year a new index of nutritional status for children of 7 to 12 years of age, which, from its components, they named the ACH index.² This index is based on three simple measurements—

namely, arm girth, chest depth, and hip width—its object being to measure soft tissues in relation to body-build. The authors claim that it selects three-fifths of extreme defect cases compared with only one-fifth by the weight-height-age method used in a comparable manner. A recent test of its efficacy is reported by C. LOUIS LEIPOLDT³ who has applied it to 600 white and 400 native and coloured schoolboys in South Africa. The application itself is simple. Two arm measurements are taken round the upper arm, one with the arm flexed and the tips of the fingers resting on the shoulder, the second with the arm hanging loosely at the side. The chest measurements are taken antero-posteriorly with the child breathing normally; inspiration and expiration excursions are measured, and their sum is the chest-depth measure. The hip measurement is taken between the great trochanters. To apply the index the chest-depth measure is subtracted from the sum of the two arm measurements, and the difference is related to the width of the hips. FRANZEN and PALMER provide a table in which is given, for different widths of hips, the minimum difference allowable for good nutrition between the arm girth and chest-depth measurements. If the difference observed in an individual is less than the figure given in the table against the appropriate width of hips, then that child is selected as malnourished. LEIPOLDT reports favourably upon this method. His groups were first assessed by clinical methods and the proportion undernourished was found to be very high—39.8 per cent. of 500 white boys, 55.7 per cent. of 300 coloured boys. On applying the ACH index 32.8 per cent. of the white boys and 62.0 per cent. of the coloured were selected as undernourished. The test was also applied to boys attending a clinic, of whom nearly everyone was clinically assessed as malnourished—viz., 91.4 per cent. of the white, 92.7 per cent. of the coloured. The ACH index gave 78 and 94.5 per cent. for these groups. Though evidently this method may overlook many cases of malnutrition, yet it seems to have merits as a simple selection test which can readily be applied by any lay examiner. More information than is given here, however, is desirable. For instance, it has to be presumed that the 32.8 per cent. of white boys selected by the ACH test all belonged to the 39.8 per cent. clinically assessed as undernourished. It would also be interesting to learn what type of malnourished boy the test failed to select—i.e., does the missing 7 per cent. comprise only those on the borderline by clinical assessment or include some of the grossly undernourished? The fact that an index based upon American boys is apparently applicable to those of South African certainly suggests that its inventors have hit on a fundamental standard.

A further test of the method is being carried out in South Africa by I. FREED whose preliminary work at Veldrift, C.P., has led him to express considerable dissatisfaction with the height-weight-age method of assessing nutrition.⁴ The 300

¹ Med. Res. Coun., Spec. Rep. Ser. No. 101.

² The ACH Index of Nutritional Status, Amer. Child Health Assoc., New York, 1934.

³ South Africa Med. Jour., July 13th, 1935, p. 471.

⁴ Ibid., p. 467.

children whom he examined had, according to the results of a questionnaire, a "monotonous and deficient diet," rich in carbohydrate and protein but short of fat and vitamins. Their home conditions also left much to be desired, for on the average there were 3.83 persons per bedroom, 2.04 persons per bed, and only 17.7 per cent. of the children slept alone. In average weight at each age these children are distinctly below the American and English figures FREED takes for comparison, but they do not differ appreciably from the figures for children at the Transvaal Memorial Hospital who would presumably from the genetic standpoint form a more satisfactory standard of comparison, though a hospital population can hardly be regarded as normal. Viewing these children with a clinical eye FREED says they have slender, wiry frames and are strong though lean. Their heights and weights give, he concludes, little indication of their nutritional status. It will be interesting to see how the ACH index classifies them.

NEW OPPORTUNITIES FOR RESEARCH ON THE NERVOUS SYSTEM

MEDICAL research in England owes much to American support. Of late years we have drawn help from the United States not only in money but in inspiration, and nowhere has this inspiration been more valuable than in neurology and psychiatry. It is with great pleasure therefore that we record two further gifts by the Rockefeller Foundation which will substantially improve facilities for work on these subjects in London.

The first, and larger, is made to the hospital of HUGHLINGS JACKSON, the master of neurology, whose birth centenary we have been celebrating this year. JACKSON based his philosophical studies on observations made at the National Hospital, Queen-square, and here there has developed a nucleus of workers whose names are rightly renowned. From this hospital, originally occupying only a single house in Queen-square, knowledge of the intricacies and the disorders of the nervous system has spread throughout the world; it is recognised as one of the great schools of neurology where post-graduates seek instruction and where research, despite all obstacles, is continually pursued. The obstacles, none the less, are considerable; the buildings have long been inadequate for carrying on the teaching and investigation. A scheme has accordingly been drawn up for new ones which will include sufficient teaching rooms and laboratories, with special wards and a new surgical department, and towards the expenses of their construction the Rockefeller Foundation has generously offered £60,000, provided that the hospital authorities can collect the rest. This means that £120,000 will have to be raised by public subscription in this country, and an appeal is issued this week. Given the new facilities, the Queen-square workers will be able to continue their important studies, notably on the histopathology of the nervous system in its relation with clinical problems, and the opportunities for bio-

chemical investigation will be greatly enhanced. In view of the necessity of approximating laboratories to wards, the plans include accommodation for 27 beds, in several wards, where special observation of patients may be undertaken. Linked to these wards are physiological laboratories in which the most advanced methods for physiological investigation will be available, and simultaneously the surgical department is to be rebuilt on a scale appropriate to the technique of modern neurosurgery. To obviate the risk that the laboratories once erected should not be used through lack of means the Rockefeller Foundation has offered an additional gift of £60,000 towards an endowment fund for research, this money to be available for the remuneration of workers within the laboratories. This grant is contingent upon the hospital board raising the funds required to complete the buildings before December, 1937, but there can be little doubt that the sums required will be raised as soon as the public really becomes aware of the implications of the appeal.

If the debt of neurology to the United States is great that of psychological medicine is in many ways even greater, and fruits of the scientific liaison with America are well seen at the Maudsley Hospital which also benefits by a new Rockefeller gift. Eight of the doctors who have been on the staff of this hospital have enjoyed the advantages of a travelling fellowship of the Rockefeller Foundation, and four others have had corresponding opportunities for study abroad made available to them by the Commonwealth Fund of America. It is not only in the furtherance of child psychiatry and social psychiatry in this country that the Commonwealth Fund has played a notable part, but also in its generous support of investigations in adult psychiatry; it has maintained at the Maudsley Hospital during the last four years no less than seven full-time research workers for periods of at least a year. Besides these grants, the hospital has had the Maudsley bequest, devoted to like purposes, and the assistance of the Medical Research Council. By such means the conditions were in part provided without which fruitful research is very difficult of accomplishment; the *Archives of Neurology and Psychiatry*, issuing from this psychiatric centre, has borne testimony to the many investigations which have been the outcome. They are the outcome also of the far-sighted generosity of the London County Council in fostering progress at the hospital: without its support such development would have been impossible. The considerable enlargement of the premises, now approaching completion, is further evidence of the determination with which this body continues to provide liberal facilities for research and teaching, as well as for the indispensable day-to-day work of treating the sick. Hence many of those who work in the hospital are not only in daily contact with the clinical problems of psychiatry but must as teachers review what is known or accepted in this branch of medicine, and as investigators seek to add to the common store. Those of them who have enjoyed a Rockefeller fellowship are indeed under a moral obliga-

tion to be so engaged, and the Foundation's addition of five research posts—four of them to be allocated to men who have held important appointments in Germany—is encouraging and welcome.

The field of mental and nervous illness is so wide and difficult that no benefaction can ensure the solution of its greater problems, no hospital regard itself as more than a unit of neurological research. It is nevertheless true that without adequate financial support much of the necessary work

could hardly be carried out, and that it is only at clinics which are fully staffed and equipped and also have access to a vast population, that the combination of trained investigators and suitable material for research is likely to be available. Much may be hoped from the work going on so actively at Queen-square and at the Maudsley, where circumstances have conspired to bring together men with experience in more than one country and familiarity with more than one branch of the subjects under study.

ANNOTATIONS

PSYCHOGENIC AMNESIA

POLICEMEN and casualty officers are not unacquainted and acquire some degree of familiarity with the forlorn creature, often dilapidated and travel-worn, who cannot recall his name and address or identify himself in any way. He shows no signs of recent concussion or convulsion, he seems in his senses, if somewhat bewildered, and his assertions bear the impression of genuineness. He may recover his memory before a psychiatrist has come on the scene, and he is usually reluctant to enter on a course of psychological treatment, if that be proposed. Often he turns out to have been in Queer street when his memory failed him so completely and, it may be said, opportunely. Sixty-three of these cases of psychogenic amnesia have been collected from the records of Bellevue Hospital in New York by Dr. Milton Abeles and Dr. Paul Schilder.¹ The sexes were equally represented if one ignores the homosexuality of four of the patients. The majority were adults who had not reached middle age, and the precipitating factor for the amnesia was almost always discovered to be some unpleasant social conflict, financial or familial. The attacks varied in duration, but few lasted more than a week. Recovery was spontaneous or was in some cases hastened by hypnosis, persuasion, free association, and other psychiatric devices. The authors, who indulge in the inevitable speculations about the oedipus complex, unfortunately do not discuss in detail the relation in time between the clearing up of the symptom and the ending of the situation that provoked it. It is often impossible to make any impression, by psychological or other treatment, upon the amnesia until external factors have ceased to make it profitable. This happens irrespective of whether the forgetting appears a deliberate effort to deceive, or is as obscure to the patient as any other typically hysterical mechanism might be. It is not only in hysteria, however, that fugues of this sort occur. The authors rightly point out that diagnosis must be made between psychogenic amnesia and a variety of conditions, including schizophrenia, manic-depressive psychosis, organic disease of the brain (including trauma to the head, epilepsy, cerebral arterio-sclerosis, carbon monoxide encephalopathy), and finally simulation; it is, however, possible to discover every feature of the psychogenic variety in patients whom one discovers to have an organic disease or a profound depressive syndrome. Although psychogenic amnesia, as it is commonly met with, may be taken, for therapeutic and didactic purposes, as a simple example of escape or "flight into neurosis," these latter instances serve to indicate

the incompleteness of purely psychological explanations of amnesia, and the occasional practical risks of accepting them as final.

WHERE IS SERUM PHOSPHATASE FORMED?

THE determination of serum (or plasma) phosphatase is assuming considerable importance as an aid in the diagnosis and treatment of certain bone diseases¹—such as Paget's disease, generalised osteitis fibrosa, osteomalacia, and rickets—and in the distinction between different types of jaundice.² This has brought to the forefront the question whether the serum phosphatase in the normal individual is derived almost exclusively from the bones, or whether all the organs containing this enzyme in relatively large amount (kidney, intestinal mucosa, liver) contribute a share. Though there is little doubt that the large increase of serum phosphatase in bone disease must be of osseous origin, and that the increase found in obstructive jaundice must arise in the liver, there has hitherto been little satisfactory evidence with regard to the origin of phosphatase of normal serum.

Armstrong and Banting³ have lately made an interesting attempt to add to our knowledge by experiments in which they removed various organs of adult dogs—e.g., the small intestine, the large intestine, the kidney, the liver, or the whole of the abdominal viscera—and noted the accompanying changes in the serum phosphatase level. In no case was there a fall in this enzyme in the serum after the operations, and the investigators believe that their observations support the view that bone is normally the sole source of the serum phosphatase. It is to be remarked, however, that in the normal individual the amount of this enzyme in the serum is much smaller (probably much less than one-hundredth part) than that, say, in an equal weight of kidney tissue or intestinal mucosa, or even of pancreas or lung; and Armstrong and Banting's experimental findings do not entirely preclude the possibility that the serum phosphatase represents the sum of continual leakages, from every phosphatase-synthesising organ of the body, of some tiny fraction of its store of the enzyme. If this is so, it would be expected that after removal of the organs mentioned, increased leakage from the phosphatase-synthesising cells of the remaining organs, now abnormal in their function, might easily mask any fall which would otherwise occur in the serum enzyme. In fact, in some of the recorded experi-

¹ H. D. Kay, Donald Hunter, and many others since 1929.

² Roberts, W. M.: *Brit. Med. Jour.*, 1933, i., 734; Armstrong, A. R., King, E. J., and Harris, R. L.: *Canad. Med. Assoc. Jour.*, 1934, xxxi., 14; Herbert, F. K.: *Brit. Jour. Exp. Path.*, 1935, xvi., 365.

³ Armstrong, A. R., and Banting, Sir F.: *Canad. Med. Assoc. Jour.*, 1935, xxxiii., 243.

¹ *Arch. Neurol. and Psychiat.*, September, 1935, p. 587.

ments, as might be anticipated on this hypothesis, a fairly large post-operative rise was observed in the serum phosphatase, a rise which was sometimes persistent to the end of the experiment. If Armstrong and Banting's views of the origin of serum phosphatase are correct, the logical corollary would be to ascribe this increase entirely to increased osseous disturbance. But is this really the case? And is the available evidence really sufficient to allow us to limit the origin of the serum enzyme in a normal animal to any one organ or tissue?

AMBULANCE AEROPLANES IN NORTH AFRICA

THE French ambulance air service in North Africa has lately been described by Colonel M. J. A. Schickel.¹ In 1934 the number of patients evacuated was only 227, compared with 576 in 1933, but there was not a single accident. The Army still supplies most of the patients, but there is an increasing proportion of civilian surgical cases requiring transport by air, and the ambulance aeroplane proves increasingly popular for medical cases. Last year the average length of an evacuation flight was 285 kilometres, and flights of 1000 kilometres and more were by no means exceptional. The question of cost is engaging the attention of the authorities, who hope to effect an appreciable reduction in the charges to civilians by the exploitation of civilian aeroplanes fitted so as to take patients in an emergency. The civil population of North Africa looks to the air ambulance service more and more for help in time of need.

THE CENSUS

WITH the issue early this year of the General Tables, comprising statistics of population, institutions, ages and marital conditions, birthplace and nationality, and of the Welsh language, the normal series of publications presenting statistics derived from the 1931 Census may be regarded as complete. As originally planned and announced two types of volumes have been issued—namely, those affording for each separate county (or in a few cases a group of small counties) the statistics relating to subjects which possess distinct local interest, and those presenting for the country as a whole the statistics relating to a single subject—e.g., occupations or industries. These volumes record the different aspects of the population of 1931 in the administrative areas as constituted at that date. As a result, however, of county reviews and rearrangements under the Local Government Act of 1929 a very large number of boundary alterations have been, and are continuing to be, made. With the completion of each county reorganisation, therefore, the more important census statistics in respect of the revised areal divisions are being issued in a special supplementary series of publications—County Volumes, Part II.—a procedure especially desirable in view of the decision not to take a census next year. The population given for these newly constituted areas is, of course, that present in them on the night of April 26th, 1931, but this at least affords some basis for estimations of the present population and the double classifications give continuity with the past and future. The magnitude of the changes involved in a large county is shown in the volume just issued, that for Lancashire.² The administrative county as a whole has obtained a net increase of 1378 acres and 70 population in marginal boundary

adjustments with Cheshire and Cumberland, but has lost a net amount of 14,137 acres and 15,304 population to nine of its county boroughs. Four urban districts have been abolished and no fewer than forty-four have undergone alteration. Four rural districts have likewise been abolished and eleven others have undergone alteration. As at present constituted this volume shows that the population of Lancashire was, in 1931, roughly 5,040,000, of which nearly one-third was resident in Liverpool and Manchester.

ALUMINIUM IN FOOD

Dr. G. W. Monier-Williams, writing from the foods laboratory of the Ministry of Health,¹ summarises what is known about the effect of aluminium on the animal system, and contributes some useful experiments of his own. He points out that in fertile soils, aluminium, like iron and manganese, appears to be present almost wholly in insoluble form and that the soluble salts of these metals, especially of aluminium, make acid soils toxic to many plants. Since iron and manganese—and in some cases aluminium—are found in plants, they must reach their tissues in a soluble form via the soil water. Nevertheless aluminium does not appear to be a general constituent of plants, although in some it is found in appreciable or even considerable amounts, mostly in hydrophilic ones. It seems certain that in many cases aluminium found in roots has been left as a result of imperfect cleansing when preparing for analysis—a possibility which will be appreciated by anyone who has made analyses of root-ashes. Monier-Williams concludes that the aluminium consumed in properly cleaned vegetable food does not amount to more than 5 to 10 parts per million, but whether this small proportion is proper to the tissues or is contained in residual aluminium silicates from soil or dust it is as yet impossible to say. In animal tissues the highest proportion found—viz., 124 parts per million—was by Underhill and Peterman in the thyroids of pigs and rats, but their findings have been contested. Myers and his co-workers found only 1-2 parts in all organs, and other workers on the whole confirm the lower figures. In his discussion of analytical technique, Monier-Williams suggests that non-specific methods may have been responsible for some of the higher results.

The outcry however has not been directed against aluminium naturally present in foodstuffs, but against its introduction from vessels in which food is prepared. The action of food on aluminium vessels is, in general, slight. Monier-Williams found that whilst distilled water boiled in aluminium vessels and allowed to stand overnight contained no aluminium, tap water similarly treated took up from 7.7 to 19.2 parts per million. Dilute organic acids take up more than water, but the action of acids in foods seems to be retarded by the presence of colloids. Mutton broth with mixed vegetables, when cooked in an enamelled pan, contained 1.3 parts per million of aluminium, while a similar mixture in an aluminium pan contained immediately after cooking 7.0 parts; when kept in the same pan and reheated, after 24 hours, 10.6 parts, after 48 hours, 11.5 parts (he does not say what other metals were taken up from the enamelled vessel). The action of alkalis is well known; sodium carbonate should not be used for cleaning aluminium vessels unless it contains a small proportion of sodium silicate.

¹ Arch. de méd. et de pharm. milit., September, 1935, p. 511.

² Census of England and Wales, 1931. County of Lancaster. Part II. H.M. Stationery Office. 2s.

¹ Reports on Public Health and Medical Subjects. Aluminium in Food. By G. W. Monier-Williams, Ph.D., F.I.C. H.M. Stationery Office. 9d.

What happens to aluminium ingested with food? Since traces are found in most organs it is almost certain that some finds its way into the blood, though having regard to the ease with which it forms lakes and dilute solutions become sols, the amounts diffusing through the walls of the alimentary tract must be very small. It is not found, except in traces, in urine; what reaches the blood must therefore be removed via the intestinal secretions or bile, probably in the faeces as phosphate. It would seem likely, Monier-Williams suggests, that the diffusibility of aluminium salts into the blood through the wall of the digestive tract may vary appreciably with circumstances and with the nature of the stomach contents. Colloidal aluminium hydroxide has been administered internally as an antacid in doses of about a gramme; it is stated to be useful in peptic ulceration. Feeding experiments on animals, which received amounts very large in relation to the body-weight, showed but little action on the system, except possibly in young animals. But it should be borne in mind that the 2 mg. given to the rat as daily dose is equivalent to about 0.6 g. for a man. After discussing the clinical data Monier-Williams concludes that there is no convincing evidence that aluminium, in the amounts in which it is likely to be consumed as a result of using aluminium vessels, has a harmful effect upon the ordinary consumer. There may be individuals who are susceptible to even such small doses of aluminium as may be derived from aluminium vessels, but evidence of this is inconclusive.

THE JOURNALISTIC BLASTOMA

For his Schorstein lecture at the London Hospital on Oct. 17th Prof. William Bulloch chose the subject of Medical Periodical Literature and he asked his hearers to coöperate in stopping what he described as a malignant overgrowth. He supported the simile by an ominous picture of the shelves of the British Museum, already 60 miles in length, increasing relentlessly by a mile a year. All this fertility of expression took origin in the growth and multiplication of universities, followed by the invention of printing, and Dr. Bulloch was able to say with pride that at the end of the sixteenth century there were three universities in Aberdeenshire alone—one in Fraserburgh and two in Aberdeen—at a time when there were only two in the whole of England. But after this burst of patriotism he soon found himself once more in a mass of depressing statistics. In 1881, he said, Billings had estimated the number of doctors in the world at 180,000; to-day there were 57,000 in Great Britain alone and probably 400,000 or 500,000 all told. The World List of Scientific Periodicals, published in 1934, contains the names of 23,838 for the period 1900–31, of which Dr. Bulloch estimated that no less than 5000 are medical. Many of these were indispensable, many mediocre, and many valueless; one and all they made the task of the reader daily more arduous and more hopeless. It had been said that soon libraries would become cities and those of the population not actually writing would be engaged in cataloguing. Robert Fletcher, a London Hospital man who subsequently became Billings's chief assistant and successor at the Surgeon-General's Library in Washington, had remarked that the whole world was a conspiracy against medical bibliographers. The Index Catalogue of that Library was the greatest bibliographic work ever accomplished, and with the Index Medicus and the Quarterly Cumulative Medical Index now issued jointly with the American Medical Association, it is a storehouse

of accurate information to which we all owe an immense debt of gratitude. But the 45,600 pages of the catalogue make alarming reading. In 1893 it contained the names of 7000 books or articles on syphilis: in the period 1893–1912 14,000 more were added, and in 1913–32 another 21,000. There were no less than 116 devoted to quadruplets, and between 1913 and 1932 a total of 1280 papers on tonsillectomy made their appearance. As for tuberculosis, he had calculated that between 1893 and 1932 at least 34,000 articles and books were published on this disease—850 a year, or more than two a day for 40 years! There are 31 periodicals in circulation dealing with tuberculosis alone. "If all this information were good and true," said the lecturer, "it would be idle to increase it"; but in fact there was not a single subject in medicine that could not be enriched by the humblest member of the profession. So he did not discourage the reporting of cases or observations. Medical writing however must be approached with serious purpose, and the writer should try to see how his views compare with those already on record—a purpose for which the Index Medicus is invaluable. Thus for the reform and reconstruction of medical journals which he demanded Prof. Bulloch seemed to pin his faith chiefly (but perhaps too optimistically) to the personal virtue of their contributors: they must eschew duplicate publication and verify their references and quotations from original sources. He also hopes for an extension of critical reviews which will show what is worth reading and what is not. But it must be admitted that—in the manner of pathologists—he seemed rather more intested in the morbid appearances of his blastoma than in its treatment. We are left with the hope that by the time every second medical man edits (and writes) a journal of his own the whole structure will break down through lack of nutrition.

SETTLEMENT OF THE LLANELLY DISPUTE

It will be a satisfaction to all who care for the good name of medicine in South Wales to learn that the long drawn-out dispute between the doctors serving the Llanelly area and the workmen's medical committee has now been settled. And not settled grudgingly, but with a declaration on both sides of goodwill and coöperation which should enable the new medical service in the New Year 1936 to be a model for similar services throughout the country. The terms of the agreement were set out in the supplement to the *British Medical Journal* last week. Every practitioner in the area who is entitled to be on the insurance committee's list may join the service. There are to be no whole-time appointments, and free choice is open both to doctor and patient, remuneration to be based on the rate which existed before the dispute occurred. Besides the general practitioner service the aim is to set up a complete consultative and specialist service, the one to be paid out of the practitioners' fund, the other out of a separate fund on a sessional, or payment for service, basis. Any local management committee is however at liberty to appoint consultants on a part-time salaried basis which bears some relation to this. Each management committee is to consist of representatives of the subscribing workmen and of the practitioners, seven of each, with an agreed independent chairman, and there is to be a similarly constituted central committee to which questions in dispute may be referred. It only remains to congratulate those whose statesmanship and forbearance have rendered such an agreement possible.

MEDICAL SERVICES IN THE ABYSSINIAN WAR

Senatore Aldo Castellani, now chief consulting physician to the Italian forces in East Africa, has made a statement, reproduced in the *Policlínico* of Oct. 14th, that the health of the troops and of the Italian workmen in East Africa is excellent. In the lower lying regions of Eritrea and in some parts of Somaliland there have been cases of malaria, dysentery, and heat-stroke, but these, he says, are few in number and not as a rule severe. This state of things he ascribes largely to the fact that no doctor is mobilised for service in the colonies until he has attended an intensive course in the Clinic for Tropical and Sub-tropical Diseases which Signor Mussolini founded in Rome three years ago. All the soldiers and workmen have been vaccinated against small-pox and inoculated for typhoid and paratyphoid A and B. Inoculation against cholera has now been started as a precautionary measure, though hitherto, it is stated, there has been no case of this disease along the coast of the Red Sea. The workmen, as well as the soldiers, are provided with helmets to protect them from sunstroke, and also cholera belts. *L'Azione Coloniale* gives the number of deaths among the Italian workmen (number unstated) employed in Eritrea during the four months, April 27th to August 28th, as 141, of which heat-stroke accounts for 84, cerebro-spinal fever for 9, and malaria for 6. Sixty of the cases of heat-stroke occurred in Massowah, where the moist heat in the summer months is described as suffocating, and work was not permitted between 10 A.M. and 5 P.M.

The *Siècle Medical* of Sept. 15th published an interview with the chief of the Army Medical Corps in Eritrea, describing the organisation for dealing with sick and wounded. Each battalion is provided with mules or camels to evacuate casualties to the nearest ambulance section. From here they go by motor ambulance, if there is a road, to the divisional ambulance, where there is a surgical unit. Behind the divisional ambulances are semi-mobile formations for the treatment of wounded who cannot be moved further back. On the sea coast, at Massowah, are hospitals for the sick and wounded awaiting repatriation, and at Asmara are groups of hospitals of which the surgical hospital contains 500 beds for the lightly wounded, 300 beds for more serious surgical cases, and 200 beds for eyes, ears, and throats. In all, provision has been made for 15,000 to 18,000 sick and wounded. The prophylactic use of quinine has been made obligatory for all men in camps below 1000 metres; it is given in 1-gramme doses on two consecutive days in the week. Chlorinisation of water is secured by the use of Sterhydrol, which is issued to all the hospitals.

On the Abyssinian side few arrangements have been made for the treatment of sick and wounded—apart from the efforts of medical missionaries and others who remain in the country. Response to the appeals made by the British Ambulance Service in Ethiopia has not yet been sufficient to allow of its full relief scheme being carried out, but a small advance unit is to leave shortly and will be reinforced as soon as public support suffices. At a meeting with the British Red Cross Society last week it was agreed that the executive of the British Ambulance Service in Ethiopia, which has been recognised by the International Red Cross Committee at Geneva as an integral part of the Ethiopian Red Cross, should remain responsible for the organisation and dispatch of relief to the Abyssinian war zone. To ensure coöperation of the two funds three members of the British Red Cross Society, including the director-

general, Lieut.-General Sir Harold Fawcus, were coöpted to the executive committee of the British Ambulance Service in Ethiopia. An urgent appeal is made for the necessary funds, and donations may be sent to Sir Arthur Stanley of the British Red Cross Society, or to A. W. Tuke, hon. treasurer of the British Ambulance Service in Ethiopia, at Barclay's Bank, 54, Lombard-street, London, E.C.2.

TESTS FOR PURITY OF OXYGEN

PRACTITIONERS using oxygen in treatment need to be certain that it is pure. The tests given in the British Pharmacopœia are not very full, and in the *Analyst* for September Mr. R. F. Frederick usefully calls attention to better methods of examination. He makes a test, which is roughly quantitative, for carbon monoxide—a most undesirable impurity—by means of a proprietary reagent called Hoolamite, which is a mixture of pumice, iodine pentoxide, and fuming sulphuric acid producing a well-defined colour change, roughly proportional to the concentration of monoxide. This is claimed to be sensitive to 0.005 per cent. of carbon monoxide but does not seem to be trustworthy below 0.06 per cent. Mr. Frederick is primarily concerned with the determination of the oxygen content, for which the B.P. test is not very satisfactory, since it is based on absorption with pyrogallol in alkaline solution; and this is liable to yield carbon monoxide especially when the gas examined is, as in this case, rich in oxygen. A reagent he considers preferable is metallic copper in contact with ammonia, recommended by Hempel in 1892, and he describes a simple apparatus for the determination. In using this it must be remembered that in mixtures of oxygen and carbon dioxide the amount of the latter gas must be determined separately and deducted from the total amount absorbed by the copper reagent.

THE scheme for establishing a joint hospitals advisory board in Manchester was approved on Oct. 16th by the University council. The representatives appointed by the University are Sir Christopher Needham, chairman of council; Prof. J. S. B. Stopford, vice-chancellor; Prof. A. Ramsbottom, Prof. W. Fletcher Shaw, and Prof. E. D. Telford.

THE Buckston Browne dinner will be held in the library of the Royal College of Surgeons of England on Thursday, Nov. 14th, at 7.45 for 8 p.m. This annual dinner, at which at least half the invited guests are members of the College, has been held regularly since 1928, those present usually numbering about a hundred. After dinner there will be an exhibition of scientific and other films in the lecture theatre, and the museum will be open for inspection.

POST-GRADUATE COURSE AT BELFAST.—At the request of the Ministry of Labour for Northern Ireland, the third annual post-graduate course in medicine and surgery for panel practitioners was held during the second half of September at the Belfast medical school (the Queen's University acting in conjunction with the Royal Victoria and Mater Infirmorum Hospitals). It was attended by 25 practitioners. The morning sessions were devoted to the clinical examination of patients, and to discussions on diagnosis and treatment; in the afternoons there were lectures dealing with the more theoretical aspects of medicine, surgery, and the specialties, and with special problems arising in health insurance practice. It is proposed next year to open a limited number of places at this course to general practitioners other than those nominated by the Ministry of Labour.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXIV.—THE PROGNOSIS OF TETANUS

AN accurate prognosis in tetanus must be based on knowledge of the march of symptoms and signs in infections of different degrees of severity.

GRADES OF INFECTION

For convenience cases may be divided into four grades:—

1. Cases in which there is local tetanus only. This usually occurs when tetanus develops after a prophylactic injection of antitoxin. The incubation period is usually very long and the prognosis is good.

2. Cases in which there is generalised tonic rigidity only, involving particularly the masseters, the muscles of the spine, chest, and abdomen, and to a lesser extent the limbs. The incubation period is usually long, over 14 days, and the prognosis good. The tonic rigidity comes on gradually and then gradually passes off again. Reflex excitability is slight and reflex spasms do not occur. The whole process may last from one to four weeks and sometimes longer.

3. Cases in which the tonic rigidity described passes into the stage of reflex spasms. The reflex excitability gradually increases. At first manipulation of a limb merely increases its tone, but later the slightest movement of the bed-clothes throws the whole body into sudden violent contraction with opisthotonus which lasts from a few seconds to ten minutes. Such spasms occur with regularity. In patients who recover this state of reflex excitability lasts from a few days to a fortnight, at first becoming gradually more severe and then passing off. The reflex spasms stop and the tonic rigidity gradually subsides.

4. Cases in which the reflex spasms come on rapidly, sometimes within twenty-four hours of the first symptom, become rapidly more frequent and prolonged until they are almost continuous, and death, often preceded by hyperpyrexia, takes place from cardiac or respiratory failure.

In cephalic tetanus, which usually follows wounds of the head and neck, the course of the disease is less clearly defined. Convulsions and cranial nerve palsies may occur early and the muscles of deglutition and speech are more commonly affected.

HOW THE TOXIN ACTS

The symptoms of tetanus are due to the effect of tetanus toxin upon the cells of the central nervous system. Animal experiments by H. Meyer and F. Ransom (see *THE LANCET*, 1917, ii., 928) with injected toxin suggest that it passes up the axis cylinders of the motor nerves to the anterior horn cells in the brain and spinal cord. The experiments showed that the severity of the symptoms depends on the amount of toxin injected. With only a very small amount the motor cells of the limb injected are alone affected and local tetanus occurs. With larger amounts, toxin reaches the blood stream via the lymphatics, and passes up the motor nerves all over the body, so that the motor cells are affected generally and there is generalised tonic rigidity. In the nerve-cells a small amount of toxin sets up a condition of over-excitability, so that the reflex impulses which maintain the normal muscular tone become more effective and the tone of the muscles concerned is increased. If the dose has been somewhat larger its action extends to the receptor cells in the reflex arc in

immediate connexion with the affected motor cells. With still larger doses more and more motor cells and more and more reflex apparatus in the cord become affected, and there is a general increase of reflex excitability.

In human tetanus, toxin is produced in the wound, and usually the more severe the wound the worse the prognosis. Penetrating wounds and secondarily infected wounds favour the development of *B. tetani* and the production of toxin, but tetanus frequently follows quite superficial wounds which, though dirty, have been allowed to scab over, so forming septic cavities in which anaerobes may flourish. Septic blisters also form cavities in which anaerobes may grow. The prognosis is usually better in superficial wounds of the latter type, because they can be completely cleaned, than in deep extensive or penetrating wounds which are difficult to drain properly or to excise completely. Wounds of the head and neck are particularly dangerous as cephalic tetanus may follow.

Death is caused by asphyxia due to prolonged spasm of the diaphragm and respiratory muscles, or by exhaustion and cardiac failure, with hyperpyrexia as a contributory cause.

GENERAL HEALTH AND AGE

The general health and physique of the patient is a very important consideration in prognosis. An attack entails prolonged involuntary physical exertion under conditions of severe suffering and general toxæmia. Any intercurrent disease or weakness must lessen the chances of recovery. For this reason the prognosis is bad in the aged, particularly on account of cardiovascular degeneration and chronic bronchitis and emphysema. It is also bad in infants and very young children.

INCUBATION PERIOD

It is well known that the severity of a case of tetanus is inversely proportional to the length of the incubation period. This period is of great prognostic value and it can usually be measured accurately, although there is always the fallacy that a wound may not have been infected with tetanus when it was incurred but that infection supervened later. Cases with a long incubation period of many weeks or months have usually followed a prophylactic injection of antitoxin. Such patients often have local tetanus and prolonged tonic rigidity is the most marked clinical feature. The prognosis is good and many would recover without treatment. As the incubation period becomes shorter reflex excitability and spasms become a more marked feature. With an incubation period of ten days or less the case is usually severe and the chances of recovery grow less. In my own series of 18 consecutive cases under 50 treated with one large dose of antitoxin on admission, all patients with an incubation period of seven days or longer recovered and only one with an incubation period of less than seven lived. The exception had an incubation period of five days. Other published series of cases show that it is rare for patients with incubation periods of less than seven days to recover and that under five days recovery hardly ever takes place.

"PERIOD OF ONSET"

A second measurement of value in assessing prognosis is the time from the occurrence of the first symptom,

usually stiffness of the jaw, to the appearance of the first generalised reflex spasms. For convenience this may be termed the "period of onset." In very chronic cases with a long incubation period, reflex spasms may not occur at all or only begin a week or ten days after the first symptom. In most cases the shorter the incubation period the shorter the period of onset. In my own series, patients with a period of onset of three days or longer recovered with one exception (three days). Two with periods of two days recovered but the others with two days or less died. In general it may be said that a period of onset of less than two days gives little hope of recovery; with three days there is a good chance and that the outlook improves as this period is lengthened.

The combined incubation period and period of onset are also worth noting. Usually they are proportional, a short incubation period being followed by a short period of onset and vice versa, but occasionally variations occur. In general a combined period of eight days or less means a bad prognosis, and with any figure larger than this the chances improve.

OTHER FACTORS

The length of the incubation period and period of onset are probably proportional to the amount of toxin reaching the nervous system. The figures given here are approximate only and apply particularly to cases in which further absorption of toxin from the wound is prevented during the first few days by a large intravenous dose of antitoxin, say 200,000 international units, and thorough treatment of the wound.

Another factor which has an important bearing on prognosis is the severity of the reflex spasms. When these are very severe and prolonged there is a danger of death from asphyxia during a spasm unless they are controlled. The prognosis is also worse in cases with early involvement of the muscles of deglutition or very severe trismus, as these make feeding difficult.

INFLUENCE OF TREATMENT ON PROGNOSIS

Tetanus is such a variable disease that the effect of treatment in any individual case is difficult to estimate. Death is brought about in several ways when a lethal dose of toxin has reached the central nervous system. The first aim of treatment is to prevent further absorption of toxin at the earliest possible moment after the diagnosis is made. This is done by giving a large dose of antitoxin followed by thorough treatment or excision of the wound. The second aim is to control the reflex spasms due to the already absorbed toxin, so that exhaustion is prevented and the danger of death from asphyxia minimised, and also to relieve pain and to promote sleep. The third is to maintain strength by giving plenty of fluids and nourishment. I have found Avertin of more use than any other sedative in controlling reflex spasms and lessening tonic rigidity of the masseters. By its use exhaustion is prevented and feeding made very much easier. Used early in repeated doses as large or larger than those used for basal anaesthesia, it has undoubtedly been the factor which has saved some patients. There can be no doubt that the earlier thorough treatment on these lines can be begun the better the outlook. Many cases are probably lost because there is unnecessary delay in making the diagnosis, and because even when it is made treatment is not sufficiently speedy or vigorous.

SUMMARY

Prognosis in tetanus depends on a consideration of the following points: the general health, physique,

and age of the patient, the severity and treatability of the wound, the length of the incubation period, the length of the "period of onset," the ability to take nourishment, the severity of the spasms, and the speed and vigour with which treatment is begun after the symptoms have appeared.

In previously healthy patients between the ages of 2 and 50, with wounds that can be thoroughly treated and an incubation period of seven days or longer, the recovery rate should be 80 per cent. or more if thorough treatment is given within thirty-six hours of the onset. With shorter incubation periods the prognosis gets rapidly worse, and when it is less than five days almost every patient will die whatever treatment is given.

LESLIE COLE, M.D., F.R.C.P.,

Physician to Addenbrooke's Hospital, Cambridge.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

ROYAL NAVAL VOLUNTEER RESERVE

E. M. Buzzard entered as Proby. Surg. Lt. Surg. Lt. A. R. Hunt placed on the Retd. List. Proby. Surg. Sub-Lt. J. K. Sargentson to *Victory* for R.N. Hospital, Haslar, for training.

The following have been appointed Admiralty Surgeons and Agents: Mr. E. A. Saunders for Pembroke Dock, and Mr. J. Campbell for Southport.

ARMY MEDICAL SERVICES

Maj.-Gen. D. S. Skelton, D.S.O. (late R.A.M.C.), V.H.S., is appointed Hon. Surg. to the King, vice Maj.-Gen. J. W. West, C.B., C.M.G., C.B.E. (late R.A.M.C.), ret. pay.

ARMY DENTAL CORPS

Maj. N. H. Medhurst and Capt. R. G. Law retire receiving a gratuity.

ROYAL ARMY MEDICAL CORPS

TERRITORIAL ARMY

Maj. W. L. M. Gabriel to be Lt.-Col. and to comd. the 149th (Northumbrian) Fd. Amb., vice Lt.-Col. and Bt.-Col. J. A. Stenhouse, T.D., vacated.

Maj. J. D. Hart, M.C., having attained the age limit retires and retains his rank, with permission to wear the prescribed uniform.

Capt. A. D. Forgie resigns his commn.

Lt. J. L. Warner, late R.F.A. (Spec. Res.), to be Lt.

REGULAR ARMY RESERVE OF OFFICERS

Maj. C. J. H. Sharp, M.C., resigns his commn. and retains the rank of Maj.

TERRITORIAL ARMY RESERVE OF OFFICERS

Lt.-Col. and Bt.-Col. J. A. Stenhouse, T.D., from Active List, to be Lt.-Col. and Bt.-Col.

2nd Lt. E. F. Baines, from T.A. Res. of Off. (73rd (Northumbrian) Fd. Bde.), to be Lt.

SUPPLEMENTARY RESERVE OF OFFICERS

Lt. W. H. H. J. de Wyt, from Supp. Res. of Off., R.A., to be Lt., and W. H. Young to be Lt.

ROYAL AIR FORCE

Flying Offrs. G. H. Stuart to R.A.F. Station, Singapore, and R. A. Cumming to Medical Training Depot, Halton, on appointment to a short-service commission.

Dental Branch.—Flying Offr. D. P. Boyle to No. 1 School of Technical Training (Apprentices), Halton.

RESERVE OF AIR FORCE OFFICERS

D. F. E. Nash is granted a commission as Flying Offr. in Class DD.

INDIAN MEDICAL SERVICE

Capt. T. R. R. Pai, M.B., relinquishes his temp. commn. *Indian Medical Department.*—Capt. (Sen. Asst. Surg.) L. A. Francis to be Maj. (Sen. Asst. Surg.).

POST-GRADUATE LECTURES

For the fourth week in succession we publish summaries of lectures delivered to post-graduates at recent week-end courses in the London teaching schools. Prof. Browne's was delivered at University College Hospital and Dr. Livingstone's at King's College Hospital.

THE TREATMENT OF PLACENTA PRÆVIA

(PROF. F. J. BROWNE)

BEFORE dealing with methods of treatment it will be useful to lay down some general guiding principles.

1. Mortality from placenta prævia is much higher in domiciliary than in institutional practice. This is chiefly because only in the latter are proper facilities available for treatment.

2. Delay in treatment greatly diminishes the chances of success.

3. As hæmorrhage is the most frequent cause of maternal death every effort should be made to prevent loss of blood before, during, and after delivery.

4. As sepsis is the second most important cause of death all necessary examinations and manipulations should be carried out with the most strict attention to surgical asepsis and antiseptics.

If ante-partum hæmorrhage, however slight, occurs the patient should be removed at once to a hospital or some similar institution. The Departmental Committee on Maternal Mortality in its final report recognised this necessity, and recommended that the first onset of "warning hæmorrhage" should be the signal for removal to a hospital or an institution offering equal facilities. Before removal no internal examination should be made, for the cervix is usually so high up that it is impossible to get a finger through the internal os unless the patient is under a general anæsthetic and the whole hand in the vagina. Besides, internal examination may cause severe bleeding with which it is difficult to deal effectively in the patient's home. Neither should the vagina be packed before the patient is removed because, in the first place, it is impossible to pack properly unless the patient is under general anæsthesia; because, secondly, the insertion of a vaginal pack practically precludes Cæsarean section, should this be later considered advisable; and because, thirdly, it is doubtful whether the pack really controls hæmorrhage.

Before removal a hypodermic injection of morphia should be given and a tight abdominal binder applied together with a sterile vulval pad and perineal bandage. The binder should come well up over the fundus so as to press, as far as possible, the presenting part downwards on to the low-lying placenta. On arrival the patient should be blood-grouped, and the question then arises whether treatment is to be active or expectant.

EXPECTANT TREATMENT

Expectant treatment (rest in bed and sedatives) is indicated when the bleeding is slight and provided the patient can be kept under constant observation and that someone who is competent to deal with the case is living on the premises or near enough to reach the patient in ten minutes. The nurse in charge should be warned to send at once should bleeding start. If expectant treatment is being carried out a vaginal examination is unnecessary, and is indeed inadvisable. If, however, bleeding is severe, or continues in spite of rest, or if it recurs

more than twice or thrice, resort should be had to active treatment.

ACTIVE TREATMENT

When it is decided that the case is one for active treatment it is necessary first of all to find out the exact state of matters by internal examination. For this purpose the examination should not be carried out on the patient's bed in the ward but only in the labour room or operating theatre with all preparations made to deal with bleeding should this be alarming, as it is apt to be after introducing the finger through the internal os. The patient should be grouped if this has not already been done, preparations should be made for blood transfusion, and if the patient has already lost severely a blood donor should have arrived at the hospital. In such cases, too, especially if the patient is not in labour, it is usually a wise precaution to have all preparations made for Cæsarean section so that if this is considered best it may be proceeded with after the least possible delay.

In carrying out this vaginal examination, a general anæsthetic should be given and the whole hand introduced into the vagina. To facilitate this it is a good plan to "iron out" the vagina by the method of Potter. With the patient in the lithotomy position, and the external genitals having been shaved and rendered surgically clean, one or two ounces of ether soap are poured into the vagina. One or two fingers are then passed up to the posterior fornix or as near to it as possible and the posterior vaginal wall ironed out by bringing the finger firmly downwards in contact with it as far as the vulva. Three, four, and five fingers are successively introduced and similarly used until finally it is possible to insert the whole hand easily and pass a finger through the internal os, and explore the situation of the placenta. Care should be taken to separate it as little as possible, so as to save unnecessary blood loss.

Now what are the methods of active treatment available? It should not be forgotten that many cases of placenta prævia (10-15 per cent.) need no treatment at all. These are chiefly those in which the bleeding is slight, and the placenta dips but slightly into the lower uterine segment. When labour starts and the membranes rupture the presenting part descends and pressing on the placenta, prevents all further hæmorrhage.

Rupture of the membranes, followed by the application of a tight binder, is an excellent method of treatment if hæmorrhage is comparatively slight and labour pains are present and the os dilating, and the placenta does not extend beyond the margin of the internal os. Both the maternal and foetal mortality are exceedingly low, chiefly because the method is used only in the milder cases.

Willet's forceps.—The use of this instrument should be confined to cases of partial placenta prævia. The membranes must of course be ruptured before applying the forceps and the head should be fixed by an assistant pressing it down as far as possible into the pelvic brim. A weight of 1½ lb. should be attached to the handles. The forceps give less complete control of the bleeding than podalic version and extraction of a foot, especially as they are sometimes difficult to apply and may easily slip off after a time, but they have the great advantage that they can be applied when the os only admits a finger. The foetal mortality too is lower than after podalic version, as the risks attendant on breech delivery are obviated.

Podalic version followed by extraction of a foot.—The podalic version may be carried out either by external manipulation alone—perhaps the method most commonly used nowadays, especially if the child is premature—or by the bipolar method of Braxton Hicks, or, if the os is half dilated, by introducing the whole hand into the uterus and seizing and bringing down a foot. Before a foot can be extracted the os must admit at least two fingers. A weight of 2 lb. is attached to the foot by means of a gauze strip and allowed to hang over the foot of the bed, but as continuous pressure is thus exerted on the placenta the outlook for the child is improved if a gauze strip is simply attached to the foot and an assistant instructed to make traction on this should bleeding start. Delivery should always be allowed to occur spontaneously and slowly, and the interval used to promote the patient's recovery from shock and the effects of blood loss, it may be by blood transfusion.

Of all the conservative methods used in treatment of placenta prævia this gives the best control of bleeding, and in skilled hands the results as far as the mother is concerned are excellent. How good they may be is illustrated by the record of Stratz who in 110 cases treated by bipolar version, and all by himself, had a maternal mortality of only 0.9 per cent. (one death from pulmonary embolism), though the foetal mortality was 64 per cent. Podalic version must therefore be still regarded as the standard method of treatment.

Vaginal pack usually followed by some other manipulation such as bipolar version.—This method is much used when the os does not admit a finger, the bleeding is severe, and the patient not in labour. The best packing material is sterile pledgets of cotton-wool that have been soaked in lysol solution and then squeezed dry. They are, however, difficult to remove without injuring the vaginal mucous membrane, and a sterile gauze roll is a good substitute. The gauze should be similarly treated—viz., soaked in lysol and then squeezed as dry as possible. The pack must be inserted under general anaesthesia, and it is necessary to lay a good foundation by packing the fornices firmly to start with so that the cervix is surrounded by a firm collar. On this firm foundation the remainder of the pack is inserted and driven well home so that it distends the vagina tightly as far as the vulva. The operation is completed by the application of a tight abdominal binder coming well up over the fundus, a vulval pad and perineal bandage attached to the binder in front and behind.

At best the vaginal pack is a septic appliance, and blood clots gather behind it and form an ideal culture medium. At the same time as a means of controlling hæmorrhage it is unreliable and not infrequently, even after the most painstaking insertion, the pack is found to be soaked through with blood. Neither can it be relied on as a means of inducing uterine contractions—thus causing dilatation of the os—the second advantage that is claimed for the pack. Finally, the insertion of the pack practically debars one from performing Cæsarean section even should that ultimately be regarded as necessary in the interests of mother or child. Statistics have shown repeatedly that the maternal mortality from sepsis is twice as high when the vagina has been packed. For all these reasons I believe that the use of the pack should be abolished or at least that it should be used only in the following combination of circumstances—a closed os, severe hæmorrhage,

and the presence of some condition such as sepsis that renders Cæsarean section inadvisable. Stratz, whose results have been previously quoted, condemns the pack and did not use it in any of his cases. The alternative when the os is closed is Cæsarean section.

Of late years *Cæsarean section* has been coming into more frequent use in placenta prævia. This is not surprising when we consider that though by conservative methods and skilled treatment the maternal mortality can be reduced to a remarkably low figure, yet the outlook for the child remains consistently bad. Even Stratz in 173 cases, though his maternal mortality was 0.6 per cent., had a foetal mortality of 44 per cent. Cæsarean section alone offers any hope of improving this. But the foetal death-rate can never be really low—probably little less than 30 per cent.—for many children are too premature to survive and others are killed by placental separation before the patient is seen.

The indications for Cæsarean section may be defined as follows:—

1. Severe hæmorrhage when the os is closed or fails to admit a finger. The alternative is the vaginal pack.
2. If the os does not admit two fingers and the placenta entirely covers it. The alternative here is Willett's forceps, but it is undesirable to apply them through the placenta.
3. Placenta prævia of any degree in an elderly primigravida, or in any woman who demands a live child, if the os is less than half dilated, and provided the fœtus is viable (over thirty-five weeks), and the patient not infected.
4. Cases complicated by disproportion or other condition likely to lead to obstructed labour.
5. Patients in extremis where it is felt that manipulations per vaginam, or even a vaginal examination, may be attended by a further severe hæmorrhage that may prove fatal.

Management of the third stage.—After the child is born the most careful watch must be kept for post-partum hæmorrhage. It cannot be too strongly emphasised that the great majority of the cases that end fatally from hæmorrhage do so because of post-partum hæmorrhage, and that even a small post-partum loss, which would after a normal labour be of no account, may be enough to turn the scale against a patient already severely depleted by ante- and intra-partum hæmorrhage. Everything should therefore be ready for the immediate and energetic treatment of post-partum bleeding—including pituitary extract, ergometrine, hot douches, sterile gauze for packing, suture needles and catgut, and donors for blood transfusion. If the medical attendant is wise he will control the fundus himself instead of leaving it to an assistant. If hæmorrhage takes place in spite of the uterus being well contracted the cervix must be exposed by a speculum and examined. If it is torn and bleeding, a continuous locked catgut suture of double No. 1 catgut should be inserted immediately. As, however, the placental site is in the lower uterine segment, which does not contract and retract well, it may bleed freely even when the uterus seems well contracted. In such cases a hot intra-uterine douche at 118° F. may be of the greatest value and above all bimanual compression. Expression of the placenta by Credé's method is unnecessary as long as there is no hæmorrhage, but should this occur it must be expressed at once. If attempts at expression fail it must be manually removed.

VALUE OF BLOOD TRANSFUSION

The prophylactic and therapeutic value of blood transfusion should be constantly kept in mind by

those who have to treat cases of placenta prævia. About 65 per cent. of the patients who die, do so because of hæmorrhage, and most of these deaths could be prevented by the employment of measures directed to the replacement of the blood lost. Its great value has been strikingly shown by Bill, who, chiefly by means of it, reduced his maternal mortality from 11 to 1·8 per cent. The proportion of his cases requiring and receiving blood transfusion was 12·4 per cent. He points out that most patients who die of post-partum hæmorrhage do so because the anæmia consequent on ante-partum bleeding produces an atonic state of the uterus, so that it is unable to contract properly after delivery. To prevent this he gives blood transfusion *before delivery* to every patient whose red cell count is below 3,000,000 and blood pressure below 90 systolic and 60 diastolic. He advises that the transfusion should be in the hands of a member of the staff who is an expert in the technique and in the blood reactions. We have already seen that the patient should be grouped on admission and that a donor should, in every serious case, be on the premises before treatment is begun. If, for any reason, blood transfusion is impossible, saline infusion will be of value.

HIGH BLOOD PRESSURE AND ITS TREATMENT

(DR. J. L. LIVINGSTONE)

THE subject of high blood pressure is a large one, and I propose to restrict my remarks to a small part of it—namely, the treatment of Allbutt's "hyperpiesia," or "essential hypertension" in which the pressure is raised primarily and apart from renal disease or other obvious causes.

In my experience it is a common thing to find that patients have been treated for high blood pressure quite unnecessarily because the pressure has not been taken properly. I would remind you that it is important to have the patient reclining on a couch for a few minutes before taking a reading. A rough reading should be taken by palpation of the radial artery, noting the level at which the pulsation returns as the pressure is released. The valve should be released completely and then the systolic and diastolic pressures noted by auscultation over the brachial artery; the systolic pressure is read at the point at which the sound is first heard, the diastolic pressure when the sound suddenly changes from a ringing to a dull muffled sound. The valve is released completely and the process repeated, until the pressures become stable; this often requires three to five readings, the last usually being the lowest. With nervous people two further examinations should be made, on separate days, before the true blood-pressure reading is considered established.

Most observers agree that a persistent reading of more than 150 mm. Hg systolic and 100 mm. diastolic may be taken as abnormal. The diastolic pressure, being an estimate of the load which the arteries have to support, and against which the heart has to work continuously, is probably of more importance than the systolic figure; it is also more constant. The pulse pressure should not exceed 60 mm. and it is a definite guide as to the cardiac output.

From the clinical side we know that in the early stages of the disease there are no symptoms; the only guide is a raised blood pressure, often of a fluctuating type, but later becoming more constantly

raised. It is only in the late stages of the condition when the arterioles, at first spasmodically contracted, are permanently narrowed by intimal thickening, that symptoms are conspicuous. The clinical classification of benign or red hypertension, with death after the sixth decade, as compared with the malignant or pale type, associated with renal damage and death before 50, is perhaps worth noting.

ÆTIOLOGY

When we consider the ætiology of hypertension we are confronted with a mass of theories, and as yet our knowledge is very incomplete. In animals there is only one method of causing a persistent rise in blood pressure—the destruction of the aortic and carotid sinus nerves (Heymans et al., *Sinus Carotidien*, 1933). In the dog the blood pressure rises to 300 mm., and there is hypertrophy of the left ventricle with interstitial fibrosis of the kidneys. In man evidence of disease of the carotid sinus, as associated with hypertension, has not been definitely proved.

Pitressin, a hormone from the posterior pituitary, definitely raises the blood pressure in animals temporarily. In man hypertension may be associated with basophil adenomata (H. Cushing, 1933), but excess of basophil cells is not found constantly in the pituitary glands of hyperpiesics. Adrenaline raises blood pressure also, in animals, and in man suprarenal chromaffin tumours have in rare cases been associated with hypertension, which has disappeared after removal of the tumour (C. H. Mayo, 1927). Recent work points to the pressor effects of the pituitary, suprarenals and thyroid, acting via the sympathetic system, and to the depressor action of the pancreas, acting on the parasympathetic or vagus system. The recently isolated pancreatic hormone, Vagotonine, seems to have important depressor effects: (1) it increases vasodilator tone while decreasing vasoconstriction; (2) it slows the heart-rate; and (3) it inhibits the action of adrenaline.

I would draw attention to the recent observations of Parkinson and Hoyle (1934) on the importance of latent hyperthyroidism in hypertension. No doubt we can all call to mind cases of hypertension exhibiting tachycardia, tremor, and loss of weight, with slight enlargement of the thyroid. In view of the recent work in America on the total ablation of the thyroid gland in cases of congestive heart failure associated with angina, this observation of Hoyle and Parkinson is of considerable importance.

From the clinician's standpoint, however, the ætiology is obscure though two facts stand out: (1) the marked familial incidence of hypertension; (2) the apparently increasing frequency of the condition, which seems to be associated with the "speeding up" of work and play in modern life. The frequency of high blood pressure may be appreciated from the fact that in the United States the mortality due to its consequences is estimated at 10 per cent. of the total mortality—a figure greater than the total death from cancer, tuberculosis, and respiratory diseases (including pneumonia) combined. Halls Dally, in his book on *High Blood Pressure* (1934), gives an estimate of 7 per cent. for this country.

The ratio of actual to expected deaths from the point of view of the life assurance societies, as given by Otto May, is shown in the following Table. These figures speak for themselves as regards the seriousness of the condition.

TREATMENT

1. *The early case.*—The patient is a young man; his symptoms are negligible; there is no evidence

of hypertrophy of the cardiovascular system, a fluctuating blood pressure being the only sign. He should be kept under observation and the blood pressure should be recorded perhaps twice a year; the actual figures should not be communicated to him, for this is apt to cause a blood-pressure phobia. Excesses of all sorts should be avoided, especially

Mortality among men and women taking out policies with the Prudential Society during the period 1920-24. The ratio of actual to expected deaths among ordinary branch policy-holders medically examined is taken as 100. (Abridged from British Medical Journal, 1925, ii., 1166.)

Systolic pressure at entry.	Mortality.
Not recorded	97.1
Under 140 mm.	102.8
140 to 170	133.6
Over 170	219.6
Over 200	827.5

as regards tobacco, alcohol, long hours of work, and late nights. Nine hours in bed on five nights a week is good advice. Causes of underlying anxiety and worry should be discussed and put right if possible. Hard physical exercise should be encouraged because it directly lowers the pressure. A course of bromide or Luminal in the highly strung type may be prescribed with benefit for some months. These simple measures are sometimes sufficient and the fluctuation in the blood pressure may become less marked as a result of them.

2. *The medium case.*—Here, let us say, there is a persistently raised blood pressure (150/95 or over), but without signs of hypertrophy of the heart or vessels and with few symptoms. In such a case the treatment must be more definite and drastic, the patient should be warned that he is on the way to becoming a hyperpietic and that he must take treatment seriously. The daily round of wear and tear must be reduced drastically; office hours should be shortened, overtime work prohibited, and a half day's golf should be taken in the middle of the week with a restful week-end. Driving a car through traffic to and from work should be avoided, the patient using a chauffeur or public forms of transport.

The diet should be restricted in rich purines, liver, kidney, shell-fish, and so forth; red meat should not be taken more than once daily; and on Friday the diet should be strictly vegetarian. In the adipose type of patient the fats, potatoes, puddings, pastries should be curtailed and the bulk of the diet should be made up by green vegetables, salads, and fruits. The weight should be recorded weekly; an hour a day should be given to walking and other exercise. A Turkish bath once in ten days is useful.

A course of iodine should be given—e.g., Lugol's Iodine Solution,

$\begin{matrix} \text{m. v.} \\ \text{m. vii.} \\ \text{m. ix.} \\ \text{m. xi.} \end{matrix} \left. \begin{matrix} \\ \\ \\ \end{matrix} \right\} \text{Night and morning for a week}$

and then m. vii. each night for six weeks.

I find it best to give the patient a dropping bottle of the solution and let him count the drops himself into a small glass of water. Small doses of thyroid to decrease weight, and with the idea of diminishing the arterial thickening, are often useful. I rarely use a bigger dose than gr. 1 daily. Sedatives should be given for sleep if necessary and nine hours should be spent in bed each night.

Septic foci should be sought for and treated. The bowels should be kept well open with a daily small dose of salts and a weekly blue pill.

If there is not much improvement after six weeks

of this régime, the patient should be put to bed for six weeks. If he had pulmonary tuberculosis, an enlarged prostate, or even an acute appendix, rest in bed would be regarded as essential. Hyperpiesia is quite as serious a condition, and this aspect of the matter should be put to the patient and will often assist in making him consent to undergo treatment in bed.

The type of case with tachycardia, nervousness, moist hands, and possibly auricular fibrillation is not uncommon, and special attention should be paid to enlargement of the thyroid. Mild grades of hyperthyroidism are probably more common than is generally suspected, and partial thyroidectomy may result in a substantial and persistent lowering of the blood pressure in these cases.

3. *Advanced cases.*—There is a persistent blood pressure of over 180/110 and signs of myocardial hypertrophy, angina of effort, and possibly retinal vascular disease; there may be evidence of early renal failure. The treatment of these patients can only be palliative but much can be done to minimise symptoms and to prolong life. It must be remembered that this class of case requires a moderate hypertension to keep up the renal circulation; there is an optimum pressure at which the symptoms are least marked; if the pressure falls much below or rises much above this level, the patients do not feel so well. The main therapeutic remedy is rest in sufficient dosage. The vasodilator drugs, as a rule quite useless in the prevention of hypertension, may have an effect on these patients and keep the blood pressure within limits.

Erythrol tetranitrate, gr. $\frac{1}{4}$ to gr. $\frac{1}{2}$, or mannitol hexanitrate, gr. $\frac{1}{4}$ to gr. 1, six-hourly, have a more prolonged action than sodium nitrite or nitroglycerin. Headache and flushing are often troublesome with these drugs, but by careful adjustment, a suitable dose may be found. Euphylline (theophylline-etheline-diamine) grs. 1½ or theobromine grs. 5, may also be tried. Vagotonine, a pancreatic hormone, has a definite action on the arterial tone: daily injections of 0.02 g. for three weeks may cause a definite fall in pressure, which persists for some weeks (Halls Dally). If there is no marked lowering of the blood pressure after the first dose, it is probably not worth while continuing this drug. Acetylcholine 0.1 to 0.2 g. subcutaneously has a similar action, and Bayer's Padutin (Kallikrein), which may be taken by mouth in tablets containing three units, is said to have a definite effect.

The Anglo-French Drug Company have recently produced a tablet named Hypotan, which is said to contain methylacetylcholine bromide 5 mg., bromocholine bromide 5 mg., and chloral hydrate 5 cg. (gr. $\frac{1}{4}$). On theoretical grounds this should lower blood pressure. I have no practical experience of the drug however, as it has been only recently introduced.

NEW MENTAL HOSPITAL AT BRISTOL.—Bristol city council have decided to proceed with the erection of a new mental hospital at Barrow Gurney. Two years ago it was estimated that it would cost £187,000, but the increased cost of wages and materials have now brought the total to about £250,000.

MOUNT VERNON HOSPITAL, NORTHWOOD.—The heavy demands on this hospital have made it necessary to extend the X ray department. This will involve an expenditure of £10,000, and as the last couple of years' expenditure has exceeded income by over £5000, the hospital is forced to make a public appeal for funds.

SPECIAL ARTICLES

BRITISH MEDICAL ASSOCIATION

MEETING IN MELBOURNE

SECTION OF PATHOLOGY AND
BACTERIOLOGY

Prof. A. MURRAY DRENNAN (Edinburgh) presided over this section, when Prof. H. A. WOODRUFF (Melbourne) opened a discussion on

Some Toxæmias of Animals due to Anaerobic Organisms

Prof. Woodruff gave a comparative account of recent work on anaerobe toxæmias in animals, and indicated the bearing of this on the toxæmia of intestinal obstruction in man, the nature of which was still controversial. The first disease discussed was "black-leg" in calves, a disease which attacked healthy young animals producing a local necrotic infection of limb muscles, due to *B. chauvæi*. Although it was not possible to cause infection experimentally by simple ingestion of cultures, ingestion was believed to be the natural route of entry of the organisms, infection by which was probably determined by some other unknown factor. Prophylactic vaccination was effective. Braxy in sheep was an infection of the abomasum or true stomach by *vibrio septique*, and an important predisposing factor appeared to be the chilling of the stomach by cold masses of food in the contiguous rumen during frosty weather. Animals surviving the first winter on a braxy farm were thereafter immune; vaccination also gave good protection. Black disease or infective necrotic hepatitis of sheep was an infection by *B. adematensis*, which was closely associated with liver fluke. Large doses of *B. adematensis* spores could be given to sheep by mouth without harm; these spores, however, could lie latent in the animal's tissues, and subsequently become active during the period of migration of the liver fluke, which thus acted as a directing factor in causing the necrotic hepatitis. Vaccination against *B. adematensis* and anti-fluke measures were effective preventives. Infectious entero-toxæmia of sheep was a disease with close resemblances to the toxæmia of paralytic ileus in man. It was caused by *B. oritozicus* which multiplied in the bowel contents, in which an absorbable highly potent toxin was produced. The resulting toxæmia was the essential feature of the disease, in which the tissues of the body were not invaded by the bacillus. Two other anaerobic organisms causing disease in sheep were *B. paludis* and the bacillus of lamb dysentery. It was of great interest to note that between *B. welchii*, *B. oritozicus*, *B. paludis*, and the bacillus of lamb dysentery close cross-toxicity relationships existed. Here was a group of bacteria with different but related toxic effects. Clearly in the investigation of anaerobic infections, proper antigenic analysis and toxin identifications were of first importance, since infections serologically different would require different serum treatment.

Prof. C. E. HERCUS (New Zealand) referred to the kinds of anaerobe infections seen in New Zealand. Tetanus had a patchy distribution there; and, although catgut infection was suspected in a number of cases, the tetanus bacillus had not been isolated from the gut. There was no record of botulinus infection in New Zealand. Clostridia infections occurred occasionally; in several cases they appeared

to have been determined by pyrogenic infections. As to anaerobe infections in animals, black leg and entero-toxæmia were present in New Zealand; but there was no braxy, and black disease was seen only in one area. Prof. Hercus doubted whether entero-toxæmia had any analogy in human pathology. He believed that nutritional factors were important in predisposing to entero-toxæmia infections.

Dr. G. H. OXER (Western Australia) agreed with the last statement. He believed that braxy existed in sporadic form in Australia. The development of active immunity was of great importance in these infections, subclinical but immunising attacks of which must be frequent. Vaccine immunisation gave good results; and there was evidence that vaccination of pregnant ewes conferred on the lambs a passive immunity to lamb dysentery which lasted for some weeks after birth.

Dr. C. W. ADEY (Melbourne) urged the necessity for distinguishing between the pseudo-toxins and true toxins of anaerobic bacteria. The pseudo-toxin of *B. welchii* would kill a mouse immediately; the true toxin caused death in 2 to 24 hours, and an important symptom was hæmoglobinuria due to the hæmolytic element which was always present in the true toxin. The hæmolytic effect was responsible for the jaundice and hæmoglobinuria in women with post-abortive *B. welchii* infections. The fact that paralytic ileus was not accompanied by signs of hæmolysis suggested that the true toxin of *B. welchii* did not play the main part in the resulting toxæmia. Dr. Adey advanced reasons for believing that entero-toxæmias might be due to the pseudo-toxins of the responsible organisms.

Dr. L. BULL (Melbourne) suggested that hæmolysis in *B. welchii* infections denoted blood stream invasion. He believed that there was no illness in man comparable with entero-toxæmia in sheep.

Prof. WOODRUFF, in reply to Prof. Hercus, said that he thought it quite possible for a pyrogenic infection to determine an anaerobe infection; and he demonstrated how, on plate cultures, the growth of an aerobe on one part of the plate could facilitate the growth of an anaerobe on another part.

Inapparent Virus Infections

This was the title of a discussion opened by Dr. F. M. BURNET (Melbourne), who said that a virus or bacterial infection might be mild and inapparent or frank and obvious. From an ecological point of view, it would be advantageous to both the host and the parasite that infections should be mild and not destructive to the host. Hence we might expect that most infections would be inapparent. This was certainly true of many virus diseases, and probably of all endemic diseases. Inapparent infections were of great importance because they were immunising. In the development of immunity there were three phases: (1) passive immunity transferred to the young from the mother and lasting for a variable period of early post-natal life; (2) active immunisation during childhood as the result of inapparent infections; (3) reinforcement of this active immunity as the result of repeated contacts with the parasite in adult life. The curves of age-incidence of typhoid, typhus, pneumonia, cerebro-spinal fever, poliomyelitis, scarlet fever, diphtheria, &c., all accorded with this conception of the development of immunity.

Dr. Burnet discussed psittacosis in some detail. He had found this disease very prevalent in many species of wild and confined Australian parrots, usually without causing any symptoms of illness in the infected birds. In other words, most of the infections were inapparent. There was a nice equilibrium established between the bird and the virus, an equilibrium which had probably been in existence for a very long period. No cases of human psittacosis had been seen in Australia. Poliomyelitis was almost certainly present in all civilised communities, mostly in inapparent immunising form. Here again there was an equilibrium between host and parasite. Outbreaks of the disease in clinically apparent form were due to the disturbances of the equilibrium by other factors which modified either the condition of the host or of the virus. Although there was no proof, Dr. Burnet thought it possible that the outbreak of X disease in Australia in 1917-18 might have been due to the virus of louping-ill.

Prof. H. K. WARD (Sydney) paid a tribute to the researches on influenza by Laidlaw, Wilson Smith, and Andrewes who were leading the way to possible control of this major epidemic disease. He commented on the nature of interactions of viruses, immune sera, and complement, reactions which are still obscure. With regard to the long duration of immunity in virus diseases, he suggested the possibility that the virus persists in the body and excites antibody formation throughout life.

Dr. BULL held that no essential differences existed between the epidemiology and the serology of virus diseases and bacterial diseases. He thought too that the concepts brought forward by Dr. Burnet should not be regarded as general "laws of nature." When a pathogenic virus had more than one host, the problem was complex, and the equilibrium between parasite and hosts would be less exact. Moreover, the effects of alcoholism, disease and habits on the incidence of virus infections in adults must be taken into account in interpreting our age-incidence curves for these infections.

Dr. E. V. KEOGH (Melbourne) considered Dr. Burnet's hypotheses reasonable and suggestive. A major difficulty in virus work was the lack of cheap satisfactory indicator animals. The use of the developing chick embryo as an indicator, devised by Dr. Burnet, was a great advance in virus research. The number of lesions developing in the chorio-allantoic membrane was an accurate measure of the intensity of the virus, and the antibody content of immune sera could be estimated by its effect in reducing the number of lesions.

Prof. HERCUS said that Dr. Burnet's remarks raised profound evolutionary problems. The New Zealand experience of poliomyelitis suggested that, following the initial introduction of the disease, there had been a gradual attainment of equilibrium between virus and host. Did the attainment of equilibrium eliminate the risk of serious epidemic outbreaks? The influence of nutritional and other environmental factors on the age-incidence curves and district distribution of virus diseases must be considered.

Dr. BURNET, in reply, agreed with Dr. Bull that the epidemiological and serological features of virus and bacterial diseases were essentially alike. With regard to immunity in virus diseases, the persistence of the virus in the host's tissues must be admitted as a possibility, but usually the permanence of the immunity was due rather to persistence of the disease not in the individual, but in the community, the

individual having his immunity constantly reinforced by intermittent contact with the parasite. In reply to Prof. Hercus, he said that the experience of other communities—e.g., in New York—showed that the attainment of general equilibrium between the poliomyelitis virus and host did not ensure against future serious outbreaks in the young.

Dr. A. BOLLIGER (Sydney) read a communication on

Determination of Hæmoglobin as Globin Picrate

The method depended on the acid-combining power of globin. The essential features were that alcoholic picric acid solution was added to the hæmoglobin solution or to the red blood-cells, the precipitate was washed with alcohol and ether, and the picric acid content was estimated by titration with methylene-blue. The estimation could also be made by titrating the residual uncombined picric acid. The results of the method agreed very closely with those of the gasometric methods of Haldane and Van Slyke. In reply to a question by Prof. Drennan regarding the sensitivity of the test, Dr. Bolliger said accurate results had been obtained with as little as 0.1 c.cm. of blood.

SECTION OF MEDICAL SOCIOLOGY

Dr. E. KAYE LE FLEMING (Wimborne) presided over this section when Dr. ALLAN VICKERS (Western Australia) opened a discussion on the

Australian Aerial Medical Services

He said that it was due almost entirely to the inspiration and tenacity of purpose of Rev. John Flynn that the Aerial Medical Service, commonly known as the "Flying Doctor" service was established. Mr. Flynn's work as superintendent of the Australian Inland Mission (the Bush department of the Presbyterian church) had, since 1912, taken him constantly into the huge sparsely settled areas of the back-country. In Australia, close settlement was confined to the eastern and southern fringes of the continent. Over the remainder, in an area larger than Western Europe, were scattered thousands of settlers, whose nearest neighbours were of the order of 100 miles distant, and whose nearest hospital and doctor were often 200 miles away. Their means of communication was primitive, perhaps a ride on horseback of 60 to 70 miles to the nearest telegraph station. Roads were often only bush tracks impassable in the wet season. It was in times of acute illness that the delay in securing medical advice, and the transport difficulties, emphasised this isolation. Mr. Flynn was responsible for the establishment of small hospitals, staffed by two trained nurses, at some of the most isolated spots; and he conceived the idea of an aerial medical service, with a central base. Such a service would have been of little use without some means whereby the outback settler could summon the doctor to his aid, and Mr. Flynn's solution of this problem was the installation of wireless apparatus. Technical difficulties were overcome by the ingenuity of the chief wireless engineer, Mr. Alfred Traeger, and financial assistance was received from many individuals and organisations, chief of which was the H. V. McKay Charitable Trust.

In May, 1928, the first aerial medical service base was established at Cloncurry (Queensland). Experimental in its inception, it soon proved its usefulness and practicability. Seven members of the medical

profession in Australia have, in succession, acted as medical officer in charge at Cloncurry for periods ranging from six months to three years. The people whom it served regarded the Aerial Medical Service not as a novel experiment, but a proven safeguard to be relied on in their hour of need. Dr. Vickers said that the central wireless station, at the Cloncurry base, employs a maximum power of 500 watts, operable on several wave-lengths. Messages outwards to small sets are sent in ordinary voice so that reception at the outposts is as easy as listening-in to a broadcasting programme. These outpost sets not only receive, but also transmit messages to the Cloncurry base. The source of power for the transmitters is a small high-tension generator driven by bicycle pedals, thus avoiding the maintenance of a complicated engine and the necessity for an unfailing source of fuel. All that is necessary is man-power. For distances up to 200 miles, communication from an outpost set to Cloncurry, or between two outpost sets, can be carried on in ordinary voice. For greater distances, it is considered advisable to use Morse, which has been made available to all by a typewriter adaptation. Dr. Vickers said that outposts were being added as funds permitted; at present there were 35, scattered over Northern and Central Australia. The most distant was over 700 miles from Cloncurry. The ambulance aeroplane was a cabin type of machine adapted to carry a full-length stretcher, with room for the doctor beside the patient. A complete battery-operated transmitting and receiving wireless set enabled the doctor to keep in touch with his base. Fuel supplies were often carried from rail-head by camel for distances up to 400 miles. Petrol costs as much as 4s. 6d. per gallon.

Dr. Vickers proceeded to outline the activities of the Aerial Medical Service; medical advice by wireless; emergency treatment, including that of major surgical catastrophes and of less serious, but disabling conditions; coöperation with other medical practitioners, and the supervision of outlying hospitals without a permanent medical staff. He stressed the fact that residents in isolated districts felt an increased sense of security in the very existence of the service. The area covered from the Cloncurry base was up to a radius of about 400 miles, an area, in fact, just a little larger than the British Isles. Occasionally, flights had been made far beyond this boundary, the longest yet made being 2500 miles, in the course of which the patient was transported 1250 miles. The value of the service to Queensland and inland Australia was inestimable. The development of the scheme was national in character. It was hoped that the development and control would remain in the hands of public-spirited individuals and organisations, with a certain measure of Government support and assistance. There had been formed an association known as Australian Aerial Medical Services, a section of which was to be established in each state, with headquarters in the capital city. It was hoped to establish bases at Port Hedland and Wyndham in the near future, and three others later on. Dr. Vickers concluded with a tribute to the memory of the late Dr. Dunbar Hooper, and expressed the hope that the various dominion services, though independently controlled, might achieve some measure of coöperation under such a title as the British Empire Aerial Medical Services, with all the prestige which that great name would confer.

Rev. JOHN FLYNN (Sydney), after an expression of appreciation of the interest manifested in the scheme, spoke of the immeasurable loneliness of

the Australian central desert lands. The railways radiated centrally from the coast, but stopped far short of the central lands. The cities were with minor exceptions all coastal. The rainfall of the northern parts of Australia was quite good, and the land was therefore habitable. In indicating the situation of the 35 outposts mentioned by Dr. Vickers, Mr. Flynn showed that one-half were in settled areas of the continent. Plans had been formulated for the ultimate endowment of 500 such outposts. He emphasised the coördination necessary for any such scheme, the necessity for a national conception of the scheme, under one control, the ideal of a British Empire aerial medical service, and the desirability of establishing a travelling scholarship for doctors as a means of spreading ideas and of promoting understanding.

Dr. J. NEWMAN MORRIS (Melbourne) referred to the needs of isolated centres, and the desirability of a continuous medical service. There were no parts of Victoria more than 20 miles from medical aid, and yet medical assistance was greatly welcomed in the relatively remote parts of this state. The Aerial Medical Service involved no encroachment on private practice. The service functioned where no private practice existed.

Dr. G. SIMPSON (Melbourne) remarked on the similarity between the Aerial Medical Service in Australia and the Highlands and Islands service in Northern Scotland. He gave a general description of the method of working of the scheme and, with the aid of lantern slides, described the conditions of life in those parts of Australia served by the service.

A discussion on

Social Aims of Mental Hygiene

was opened by Prof. HARVEY SUTTON (Sydney) who read a paper on the *Child Guidance Clinic*. He said that problems of behaviour, especially bad habits—"the everyday problems of the everyday child"—had long been the subject of discussion. Controversy as to school discipline and corporal punishment seemed to have originated in England with the appearance of grammar schools in the early sixteenth century. In Elizabethan days, schoolmasters showed an implicit belief in the maxim of Solomon: "Spare the rod and spoil the child," and the ability to flog pupils became for over two centuries one of the vocational attributes of the pedagogue. It was thought apparently that the birch tree was the tree of knowledge. Ascham, the tutor of Queen Elizabeth, protested against the universal indiscriminate use of corporal punishment. John Locke, physician, philosopher, and politician, had written a book, in every way modern, on "How to bring up your children." The author was himself a bachelor, and exercised the perennial right of the unmarried to instruct parents in their duties. He showed that corporal punishment was of little value, but it required a generation of universal education to discredit its use. Making the punishment fit the crime by making "the prisoner pent—unwillingly represent—a source of innocent merriment" might prove a solution, for ridicule and shame were, as Locke pointed out, powerful influences. Increasing experience, however, pointed to other methods; just and unemotional criticism, encouragement of good efforts, the selection of sound interesting outlets for energy, and better personal understanding between teacher and pupil. Like the gyroscope, children reacted best to indirect influences. How often did

we find that the longest way round was the shortest way home?

Dr. Sutton dealt with bad habits and their correction. Important amongst these were bed-wetting and masturbation. In regard to the former, the speaker strongly deprecated drug treatment, and emphasised the need for encouragement and sympathetic understanding. Perhaps of all bad habits masturbation was the best example of the failure of ignorance. For years moral propaganda had described the alleged rotten effects on the central nervous system, but now we knew that masturbation was a symptom of mental instability rather than a cause, and that even habitual practice was injurious only to certain special types of person. The frequency of appearance of the male emission was not known. In a group of 100 medical and other university men students investigated, there appeared to be a more or less regular rhythm of some 14 days, becoming more regular after the age of about 21 years. This emission was of course strictly physiological, and illustrated the need of meeting the natural curiosity of the adolescent with simple truthfulness.

Stammering was a constant problem in school life. In New South Wales, about 1 in 40 boys showed disorders of speech, chiefly stammering, whilst in girls the frequency was only about one-third and then not to the same degree. The defect could be a very real nuisance to the individual. The idea of classes and clinics collecting groups of stammerers used to be viewed adversely, but the atmosphere of success and the expert teaching made possible in these clinics more than outweighed any such disadvantage. The proportion of left-handed children amongst stammerers was higher than the proportion in the school population, about five to one. Evidence seemed to show that the left-handed stammerers had been changed to right-hand writers under pressure or penalty—another example of the danger and futility of repressive methods.

Other minor defects might influence the mental and physical progress of the child. Amongst these were defects in vision, hearing, nutrition, congenital heart disease, and so forth. Myopia might lead to the "shut-in personality." Unilateral deafness and colour-blindness often lead to unsuspected mental conflicts.

The doctor's part in assisting the child to adjust his problems was an important one. It was during the pre-school years when the child's character was being formed that the parent especially needed such help from the doctor. The development of child guidance clinics raised several important questions—where should they be located? By whom should they be staffed? What would be their objective? Hospitals were frequently chosen, where the medical control was unquestioned. The Education Department also provided suitable locations. Outside these two official relationships there were private clinics, the best leader being a medical man, with wide sympathies, a deep personal interest in children, and the gift of handling them. The combined physician, paediatrist, psychiatrist, and school doctor should have as his second in command a trained educational psychologist, and the third of the trio was the trained health or home visitor, to evaluate the patients and the home. In conclusion, Dr. Sutton emphasised the importance of biological, physiological, and medical training for those who wished to gain the fullest appreciation of the problems of personality.

Dr. K. S. CUNNINGHAM (Melbourne) recalled the fact that Dr. Sutton had introduced intelligence

tests locally in 1913. As a non-medical man he regarded it as a great privilege to be allowed to join in this discussion. He thought that those who called themselves psychologists should have some qualifications before doing so. In reference to child guidance clinics, all children needed guidance of some sort.

Mr. G. A. OSBORNE (Education Department, Melbourne) said that the policy of the Department was that sex education was definitely taboo in Victorian schools. In reference to discipline, corporal punishment had practically disappeared because of the better understanding between teachers and pupils. There was more real happiness in the work. The Department attributed importance in the make-up of the child not only to heredity, but also to environmental factors, particularly in the pre-school age. Their policy included the provision of more nursery schools and kindergartens, special schools for the mentally deficient, and the encouragement of the formation of school clubs. Specially trained teachers, social workers, and psychologists were essential.

Prof. J. A. GUNN (Melbourne) spoke of the coöperation of the three team-workers mentioned by Dr. Sutton. The training of psychologists was most important, and we were undoubtedly suffering from a plethora of untrained people who assumed the title. There was a large and important tract of country between the normal and the abnormal. One's attitude to life was largely decided by the reaction to fear and to sex.

Dr. R. EMERY (Melbourne) discussed the attitude towards crime and delinquency from the psychiatric viewpoint. The idea that punishment could be useful in the curative treatment of maladjustments was wrong. One's attitude towards crime was largely conditioned by unconscious motives and repressions; there was no such person as an unbiased judge, whilst verdicts might be the expression of subconscious sadism. The study of delinquent children was of great moment.

Dr. J. F. WILLIAMS (Melbourne) recounted his experiences at the psychiatric clinic started by Prof. R. J. A. Berry at the Children's Hospital, Melbourne. Children examined included mentally deficient and emotionally retarded, and those whose physical defects were the real cause of their difficulties. Epileptics were a great problem. He thought that nursery schools were very useful, particularly for the borderline cases.

Prof. W. S. DAWSON (Sydney) thought that in child guidance clinics should be controlled by medical men. There was a great need for the education of both parents and social workers. In reference to the mentally deficient, and also of the dull "normal" child, the development of institutional methods was necessary.

Miss HINLOP (Melbourne) said that her experience as directress of the training of social workers had satisfied her that team-work along the lines suggested by Dr. Sutton was best. She stressed the difficulty of assessing and improving home conditions unless there was a line of approach to the parents other than through the child. Social workers had a very difficult task, and some grounding in the principles of psychiatry was required.

Dr. N. A. ALBISTON (Melbourne) said that the basis of our life depended on the recognition of the family as the social unit. This was affected by such institutions as nursery schools, and there was a danger of the misapplication of principles. He hoped that

the family life would be assisted by the development of the scheme.

The CHAIRMAN commented on the points raised in view of his experiences as a general practitioner and as a medical adviser to a public school. He said that corporal punishment was occasionally necessary in the interests of school discipline, but that the punishment of girls in this way was very rare. The problem of nocturnal enuresis was very difficult; a developmental factor and possibly also some endocrine upset was at work. He agreed with other

speakers that the child should be educated in sex matters by reference to human anatomy and physiology, and not by analogy. The real aspect of the life of the child was formed from the attitude of his parents.

Dr. SUTTON, in a brief response, emphasised that the real function of child guidance clinics was to assist the parents to maintain the integrity of the family unit and promote its harmony. The usurpation of parental function was never intended.

PANEL AND CONTRACT PRACTICE

The Cost of Vaccines

It is sometimes alleged that insured persons receive a standard of treatment below that enjoyed by private patients, and this idea is one which insurance practitioners themselves can do most to dispel. Unfortunately many practitioners, unwittingly no doubt, foster the notion that anything out of the common is beyond the scope of medical benefit. And one of the most common causes of misunderstanding is the administration of injections—vaccines and the like. Sometimes the doctor, anxious to do the right thing, writes to the Insurance Committee something like this: "I have been advised to give a vaccine as a preventive against influenza. Could you please inform me if the vaccine can be obtained through the N.H.I.?" Of course it can and should be given to the patient if the doctor is of the opinion that it is necessary for the proper treatment of his patient.

But it is more unfortunate still when, having agreed to give a certain form of treatment, the doctor causes his patient to incur expense and does not take the trouble to ascertain whether the expense is justified. Here are the salient points of a recent case.

The patient had been suffering from recurrent boils which in spite of treatment with various medicines, local applications, &c., relapsed from time to time. The patient asked the doctor whether there was any other treatment which the doctor could give him, in response to which the practitioner referred to a recently introduced vaccine treatment for staphylococcal infections, saying that as he regarded the treatment as experimental, and not as requisite or necessary, he would not be prepared to issue an insurance prescription for the vaccine, but that if the patient cared to purchase it himself the doctor would apply it free of charge. The particular preparation used was one which could have been either ordered or supplied by the doctor, and the clerk of the committee when telling him so commented upon the doctor's excuse for failing to prescribe it from the point of view that in medical treatment much is of an experimental nature. It seemed to the clerk that, other remedies having been tried and found wanting, there was every justification for ordering the vaccine in this case even though the doctor was not certain that it would have a beneficial effect.

The weakness of the doctor's position in this case was accentuated by the fact that he himself "mentioned" the new treatment and was willing to apply it experimentally at the patient's expense. It would obviously be improper to debit insurance funds with the cost of experimental investigations in therapeutics (although the Medical Research Council's funds actually originated in this way), but to apply a recognised form of treatment experimentally in a particular case is a different proposition. The difficulty was overcome by the doctor authorising the refund to the insured person of the amount paid, and a corresponding debit against his account, but

he is claiming the cost of the preparation from the committee, so no one will be the worse off, and one insured patient at any rate will know that insurance medical treatment is not restricted to what can be obtained in a bottle.

Adequate Prescribing

The annual report for 1934 of the chief medical officer of the Ministry of Health contains a paragraph about insurance prescribing, in which it is pointed out that the regulations impose no restriction on the discretion of a doctor in prescribing medicine for his insurance patients. That discretion, however, must obviously be exercised reasonably, and if on investigation it is found that a doctor's prescribing is causing unreasonable demand on the funds available, money may be withheld from his remuneration. Judgment of the question rests in any case not with the Minister, but with the doctor's professional colleagues on the local panel committee; the Minister has no power to set standards in this matter. The demands on the funds caused by the prescribing of insurance practitioners throughout the country as a whole continue to cause anxiety. The average expenditure for drugs per head of the insured population in 1934 (namely, 3s.) showed no appreciable decrease on that for the previous year. While a certain increased demand is to be expected from the extending use of costly, though necessary, modern methods of treatment it remains, as most observers believe, that a considerable proportion of the total outlay on drugs could be eliminated without detriment (possibly with advantage) to the proper treatment of the people. The report goes on to say that the wide variations in cost noted in the previous report, upon which we commented recently, remain with but little change, the average varying from 55.5 pence in Salford down to 22.6 in Oxford. It is gratifying to be able to state that during the year there was evidence that increasing interest in the question of the general high level of cost of prescribing is being taken by representatives of the profession themselves in various parts of the country. The C.M.O. points out that in a professional matter of this kind the well-directed efforts of representative members and bodies of the profession must prove incalculably more potent than any disciplinary action in individual cases which is open to the department.

The Regional Medical Service

Again it is found that insurance practitioners are averse from calling in the regional medical officer for consultation purposes. For decision as to incapacity the approved societies referred 499,885 cases and doctors 1366 cases, but for consultations the societies referred 2559 and insurance doctors only 82 cases. During the year the R.M.O.'s made 14,991 visits to insurance doctors in connexion with prescribing,

certification of incapacity, and the keeping (in some cases the non-keeping) of medical records.

Medical Records

A practitioner writes: "In a recent Public Health note (THE LANCET, Sept. 28th, p. 740) occurs the sentence, 'Practitioners may still be heard to complain about the record keeping that the insurance medical system imposes upon them, yet when they were students they were taught, as clinical clerks, to note the salient facts of a case for future reference.' As an insurance G.P., may I say that it is not the clinical records we object to so much as the compulsory tick for each attendance and certificate, and the schoolmaster attitude of the inspecting R.M.O., with the threat of a fine if the ticks do not come up to so much per cent. Compulsory ticks should be forthwith abolished, and if the visiting R.M.O. must come round and inspect, let him stick to a survey of clinical records."

To be useful to doctor and patient, records should be consulted each time the patient is seen, and some note made to indicate progress. If it is generally found that the insertion of a mark in one of the columns provided entails any serious extra labour, something should be heard of it at the forthcoming Panel Conference on Nov. 14th. We understand that the Insurance Acts Committee have informed the Ministry of Health that after careful consideration they are convinced that, subject to certain minor alterations in the form of record, the present system of medical records should in all essentials be continued. But the committee have suggested that the profession, through their local committees, should coöperate with the department in measures for improving the clinical, as distinct from the administrative, value of the records where this is found defective. Consideration is being given to an appropriate procedure for carrying the suggestion into effect.

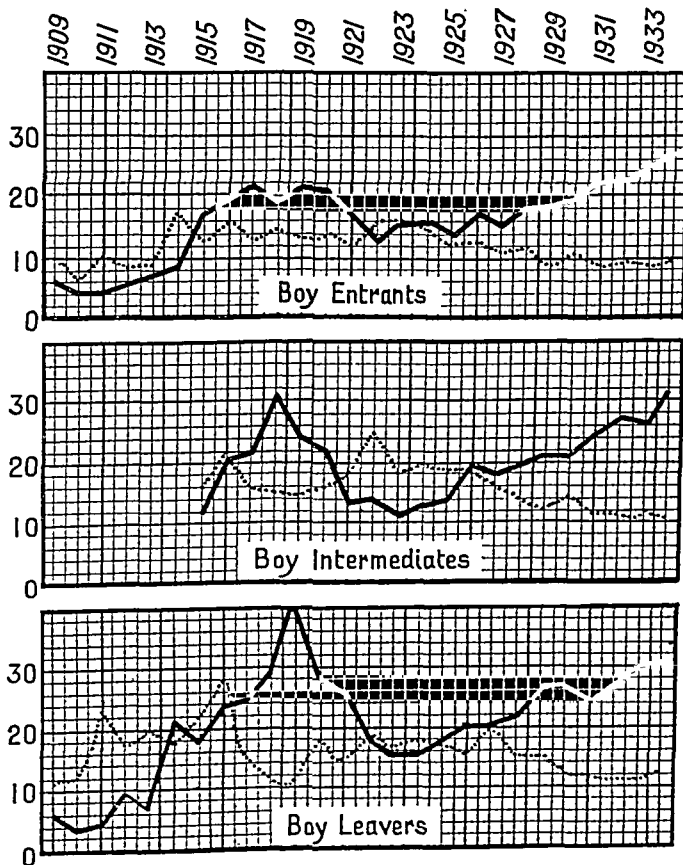
PUBLIC HEALTH

Records of Nutrition in School Life

THE request by the Board of Education that continuous records of nutrition should be kept on the lines followed in the county of Gloucester leads us to turn to Dr. J. Middleton Martin's report as county M.O.H. where his data and methods are explained. He speaks of estimating the "functioning of the body as a whole," and quotes Memo. No. 124 of the Board which begins: "The main issue is to estimate the general well-being of the child," and after giving examples of criteria ends with the remark: "It is the general impression which decides the issue." The Board suggest a grouping into (1) excellent, (2) normal, (3) slightly subnormal, (4) bad; the four groups in the Gloucestershire report probably denote similar grades. In either case the classification depends mainly on the personal impression formed by the examining doctors. Dr. Martin regards the average weight and height for age determined for his school-children in the years 1909-1918 as a serviceable check, but the relation of weight to age is hardly of much value as a standard of nutrition. He cites examples of

wide discrepancies between observers, adding that in the first 12 years of the series there were ten changes in the medical staff, although for the last 14 years the personnel of four has been the same. In his view these individual variations are so blended in the mass of figures that the combined findings may fairly represent the nutritional trend in the county as a whole. Support for this view will be found in the fact that in all the different age and sex groups the changes

have been similar, and that there is a close coincidence between the periods of rise in the "above average" group with a fall in the "below average" group. We reproduce here the three of Dr. Martin's graphs which concern boys. The numbers for each year are of course not large; the total routine medical inspections in the county in 1934 were less than 1300, compared with over 200,000 for London, and the effect of minor errors in the records is enhanced by their subdivision into six sections according to sex and age grouping. But the Gloucestershire records cover a period of 26 years, and Dr. Martin notes that the London figures for 1920-33 show a similar rise and fall. They are moreover fairly consistent in the various groups, and they do demonstrate



Nutrition of School-children in Gloucestershire.

Percentages (boys) above the average (continuous line) and below the average (dotted line).

that the general nutrition tended (1) to improve just before and during the war, (2) then to fall somewhat, and (3) to improve fairly regularly during the past 12 years.

These tendencies are in part confirmed by the records of other areas. They differ however from those of Dr. Friend in his recent work¹ on the nutrition of public schoolboys, the condition of whom was markedly worse during the war years. Naturally the effect of the war on the financial resources of the families of elementary and public school-children was not the same. The example of Gloucestershire might well be followed by other authorities which have not heretofore kept such records and can benefit by the experience already gained in the avoidance of possible sources of error.

New Public Health Legislation

Parliament is likely to be prorogued this week, which will mean the postponement of the big new Public Health Bill. This is the measure which will repeal and replace the existing legislation which goes back to 1875 (when both the central and the local authorities were different from those of to-day) and was greatly extended in 1907 and 1925. It will perform for public health the same admirable work as was done for local government when the consolidating Local Government Act was passed a few years ago. As on that occasion, it will doubtless be found that some new provisions must be enacted for the sake of symmetry and to remove uncertainties. It is to be hoped that members of Parliament will not wreck the chances of the Bill, which is primarily a redrafting Bill, by overloading it with amendments of their own. The committee which has produced the new draft was appointed by the Minister of Health in 1930. It has produced visible results more swiftly than that other body which the Chancellor of the Exchequer appointed several years earlier to consolidate the law of income-tax. When the Public Health and Local Government Consolidation Committee held a dinner to celebrate the completion of its work on the Local Government Bill, Lord Chelmsford was still its chairman. At his death Lord Addington, who has considerable experience of local government matters, was appointed to succeed him. Although the proposed new legislation means that medical officers of health and others will have to learn their way about a new code and probably to supply themselves with a new text-book, the general interest of all in public health will be stimulated and assisted by giving the citizen a single modern document in which the law may be found.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 12TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2839; diphtheria, 1218; enteric fever, 37; acute pneumonia (primary or influenzal), 530; puerperal fever, 46; puerperal pyrexia, 121; cerebrospinal fever, 10; acute poliomyelitis, 14; acute polio-encephalitis, 2; encephalitis lethargica, 7; dysentery, 26; ophthalmia neonatorum, 95. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 18th was 2955, which included: Scarlet fever, 1035; diphtheria, 1156; measles, 36; whooping-cough, 293; puerperal fever, 17 mothers (plus 8 babies);

encephalitis lethargica, 268; poliomyelitis, 15. At St. Margaret's Hospital there were 24 babies (plus 11 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 3 (0) from measles, 6 (1) from scarlet fever, 14 (3) from whooping-cough, 25 (7) from diphtheria, 41 (11) from diarrhoea and enteritis under two years, and 21 (5) from influenza. The figures in parentheses are those for London itself.

Southampton reported the only death from enteric fever. Liverpool and Birmingham had each 4 fatal cases of enteritis; no other great town more than 2. The deaths from measles occurred at Liverpool 2, Manchester 1.

The number of stillbirths notified during the week was 290 (corresponding to a rate of 44 per 1000 total births), including 44 in London.

MEDICINE AND THE LAW

Suggested Road Traffic Courts

At the Law Society's provincial meeting at Hastings last month a speaker advocated the creation of separate "road traffic courts" with civil and criminal jurisdiction. He thought that some 500 courts would be required, with a traffic judge and traffic registrar sitting concurrently in each—presumably on the lines of our existing county courts. The creation of such courts, he opined, might hasten the decrease of the coroner's court, a result which, in his opinion, would be a blessing to all.

There is no doubt that the High Court in London is at present heavily preoccupied with claims for damages in what are called "running-down cases" and that, if these could be tried elsewhere, much judicial time would be set free for other kinds of litigation. Not only would the arrears in the King's Bench Division vanish; the courts of summary jurisdiction also would be relieved of the thousands of summonses against motorists which the last volume of Criminal Statistics showed to be a great part of the magistrate's work. There seems, however, no need to belittle the services of the coroners' courts. Unlike other juries, the coroner's jury is allowed not only to reach its conclusions in the light of the evidence offered at the hearing, but also to bring to the case its own knowledge of local conditions and circumstances. It may well have some special contribution to make by recommending that a traffic crossing known to be dangerous shall be made more safe or that existing warnings or notices be improved. In any event the inquest system needs to be considered as a whole and not merely by reference to a fraction of its activities. It will be time enough to talk of ending the coroner's court when the departmental committee, now examining the practice and procedure at inquests, decides to advocate termination.

Psychiatry in Schools of Law

Are there any courses at English universities where law students may familiarise themselves with psychiatry? In America the University of Yale has instituted such a course long enough for it to be recognised part of the work of the Yale Law School. The medical faculty of the university has produced in Dr. Kahn a teacher who has specialised in criminology. He and Dr. Thompson, of the Department of Psychiatry in the School of Medicine, have coöperated with the teachers of law, and the police authorities send actual cases for clinical demonstration. There is a seminar study of various medico-legal problems raised

¹ Friend, G. E.: *The Schoolboy*. Cambridge. 1935. See THE LANCET, 1935, I, 1394.

by abnormal personalities in both adult and juvenile delinquents. The students, it is believed, undertake research into the patients' environment and pedigree. It is realised of course that useful conclusions cannot be reached without prolonged observation and that two hours weekly cannot fully equip the student. Nevertheless, the group discussions, open to a limited number of law students with the consent of the instructors, will do something to acquaint future judges with the possibilities of a science which courts of law ought not to neglect. We have police magistrates in London who have recognised the value of psychiatry; others are inclined to be contemptuous. The Home Office has begun (as the annual reports of the Prison Commissioners have revealed) to make a tentative use of psychiatrists in selected cases of difficulty. It has not yet admitted the success of the experiment.

IRELAND

(FROM OUR OWN CORRESPONDENT)

A BELFAST HOSPITAL AND ITS TRADITIONS

IN an address delivered at the opening of the new session at the Royal Victoria Hospital, Belfast, Dr. Robert Marshall told something of the history of the hospital which the students had come to serve. In 1792, which marked its beginning, Belfast was a small town of 18,000 inhabitants, described as "unusually picturesque and beautiful—the pleasantest spot in the north of Ireland." In that year representative citizens appealed for funds to found a general dispensary for the sick poor. The first honorary staff consisted of two consulting physicians, two attending physicians, and two attending surgeons, and it was interesting to note that pending the election of Mr. Hull as apothecary at £40 a year, the surgeons were expected to dispense medicines for the physicians. This dispensary, the first of its kind in the city, had a troubled career until the year 1799, when a fresh start was made and three houses in Smithfield were rented, Dr. McDonnell and Mr. Fuller being appointed physician and surgeon respectively. The hospital steadily gained the appreciation of the public and in 1810 McDonnell and his colleagues obtained promise of a site of ground in Frederick Street. The first patients were admitted on August 1st, 1817, and in 1820 the admission of pupils was authorised; but it was not until 1882 that James Alexander Lindsay was appointed the first house physician. The speaker emphasised that this system of resident pupilship had been for over a century the distinctive feature of Irish medical teaching and advised the students to avail themselves of this opportunity, because it was the most important part of their course.

The year 1827 marked another stage in the history for it was in that year that Dr. McDonnell gave the first formal clinical lecture on the subject of systematic medicine. The need for a medical school was then keenly felt, but it was not until the autumn of 1835, exactly a hundred years ago, that this was opened in the Royal Belfast Academical Institution. The first professor of medicine, Dr. Henry MacCormac, was chiefly remembered because he was the first to insist on fresh air in the treatment of tuberculosis. He was a man of great erudition, conversant with 20 languages, and received a public testimonial to his work for the sick poor during the cholera epidemic of 1832.

Dr. Marshall then referred to the life and death

in 1845 of Dr. McDonnell who must always be revered as the founder of the hospital. During his lifetime he had, largely by his own enthusiasm, erected the hospital and the medical school of which it was a part. In 1903 the present hospital was opened at a cost of £120,000. He also spoke of some of the great ones who were the teachers in the past: Sir William Whitla, Sir John Byers, Sir John Walton Browne, Dr. Lindsay, Dr. McQuitty, Dr. McKisack, Dr. McIlwaine, Mr. Robert Campbell, and Mr. Andrew Fullerton. He reminded them of the terms in which the hospital had been dedicated—"to the sick and to the art of medicine." The sick man came first and the art of medicine second.

Prof. R. J. Johnstone presided at the meeting and a vote of thanks was proposed by Mr. Hardy Greer and seconded by Dr. J. C. Rankin. In the course of his address Dr. Marshall referred to the appointment of Mr. T. S. Kirk as consulting surgeon, after years of devoted service, and said that Mr. H. P. Malcolm had been promoted surgeon and Mr. C. A. Calvert elected assistant surgeon. The board of management have made three notable achievements in the past years—namely, a new nurse's home and a pavilion for private patients, which were in the course of erection, and a superannuation scheme for the nursing staff.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

The annual meeting of the president and fellows of the Royal College of Physicians of Ireland was held in Dublin on the afternoon of St. Luke's Day. Dr. John Agar Matson was re-elected president of the College. The following were elected censors: in medicine, Drs. J. F. O'Donnell and E. T. Freeman; in midwifery, Dr. N. McI. Falkiner; in medical jurisprudence, Dr. P. T. O'Farrell. The annual dinner of the College was held on the evening of the following day, when 25 fellows and 65 guests dined together.

BELFAST POLICE SURGEON'S DEATH

Dr. P. E. O'Flaherty, who died on Oct. 14th after a short illness, was senior police surgeon in Belfast. Educated at St. Malachy's College he graduated in medicine through the old Royal University of Ireland and set up practice in Belfast. For some years he was a member of the clinical teaching staff of the Mater Infirmorum Hospital. Later he was appointed medical officer to H.M. Prison and the Royal Irish Constabulary in which offices he had over 20 years' service. Dr. O'Flaherty was popular among his professional brethren and the general public and his loss will be deeply regretted.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

CHANGES AND CULTS

THE 199th session of the Royal Medical Society opened last week when Sir Walter Langdon-Brown delivered an address on *Changing Conceptions of Disease*. Dr. J. L. Henderson, senior president of the society, was in the chair. Sir Walter began by recalling his first visit to Edinburgh as a student 45 years ago, and paid a graceful tribute to the Scottish capital in respect to both literature and medicine. He proceeded to remind his audience of the debt medicine owes to the genius of the Greeks. The development of medical knowledge might be compared to a spiral, which though tending to ascend

has frequent opportunities of looking back at knowledge which was gained long ago and has since been forgotten. It is often found that discredited views have much to be said in their favour, and while some might describe this as the swing of a pendulum, the analogy of the spiral is more correct. The lecturer then described the changes caused in medicine by the development of biochemistry which has done much to bring to light the deficiency diseases. He emphasised the danger of the medical profession forming ill-considered conclusions, and illustrated this danger by speaking of the changing views of viscerophtosis during his own lifetime. The medical profession, he said, is apt to develop cults, such as that which

considers excess of uric acid in the blood to be a cause of many ills. This cult had developed to such an extent that he had heard a physician express the belief that a man never completely gets over the effects of eating a rump steak. Uric acid was now known to have little or no poisonous effect on the body. The importance of psychological disturbances in causation of many forms of disease, especially those affecting the alimentary system, had been one of the most important advances of post-war medicine.

Sir Walter was given an enthusiastic vote of thanks, proposed by Prof. W. T. Ritchie and seconded by Dr. K. M. Morris. The session could scarcely have had a more interesting or entertaining beginning.

CORRESPONDENCE

COUGH AND HUMIDITY

To the Editor of THE LANCET

SIR,—In a London infirmary, where I treated consumptives for many years, I was much struck by the variations in the amount of coughing heard in the ward and by the marked influence of changes of weather. It has been said that in phthisis every cough is a tragedy, and it should certainly be the aim of the physician to stop all useless coughing if he can.

In designing wards for the treatment of consumption very little attention is directed towards the production of a suitable degree of humidity, though the ward temperatures are charted with solemn regularity. I have noticed that cold dry nights in the winter are often more troublesome as far as coughing is concerned than "muggy" nights, even if the latter contain their quota of fog. I imagine that the explanation is somewhat as follows. Cold air, entering by the windows, has a low moisture content. In passing over the radiators it is heated many degrees but its water content remains the same. By reason of the rise in its temperature the air has now a much greater drying power so that when inhaled it dries and irritates the throat and air passages. By using wet and dry bulb thermometers, I collected figures illustrating this point, coughs in a ward of 28 beds being recorded by a nurse over half-hour periods, when it was evident that there was more coughing when the air in the ward was many degrees warmer than the outside air.

It therefore seems desirable that, when these conditions obtain, the humidity of the air should be increased artificially to a degree most suitable for patients. It is not desirable to produce "muggy" air, for this is known to be harmful to consumptives. Masten states that for most tuberculous cases the temperature range should be between 38° and 68° F. with a humidity not exceeding 50 per cent.

I am, Sir, yours faithfully,

Buxton, Oct. 15th.

G. C. PETHER.

INVERSION OF THE UTERUS

To the Editor of THE LANCET

SIR,—Mr. James Cook's note in your last issue (p. 884) on complete inversion of the uterus leads me to report the following case which I saw on August 19th, 1934.

A primipara, aged 24 years, had had an easy low forceps delivery. Her own doctor and a qualified midwife were in attendance. About ten minutes after the infant was born the mother had a violent pain, and the uterus with the placenta attached was expelled. I saw the patient

half an hour after this occurrence. There was definitely no history of traction on the cord after delivery of the child, nor, as the cord was of normal length, was it likely that traction had been exerted on it, between the pains, during the forceps delivery, and as the fundus had not been manipulated, it was apparently a case of spontaneous inversion of the uterus.

The patient was profoundly shocked, the pulse being hardly perceptible and impossible to count. There was very little hæmorrhage; 1 c.cm. of Coramine was immediately given, together with the usual treatment for shock. The placenta was then detached from the surface of the uterus which was immediately well washed with Dettol solution.

The uterus was easily replaced without an anæsthetic, 1 c.cm. of pituitrin given, and an iodine douche administered. The uterus was then well contracted. On the second day the temperature rose to 100° F. and remained at this level, with variations of half a degree for seven days. Antistreptococcal serum and dettol douches were given, and an uneventful recovery was made.

This case supports Mr. Cook's suggestion that early reduction of the inversion is important. The confinement took place in the patient's house, and removal to hospital would have necessitated a journey of six miles, with consequent delay in treatment and possible disaster to the patient. As the amount of hæmorrhage is generally said to depend on whether the placenta is separated or not, it was interesting to note that the removal of the placenta did not materially increase the hæmorrhage.

I am, Sir, yours faithfully,

Stourbridge, Oct. 18th. C. J. CHESTERFIELD COOKE.

URINARY FISTULA FOLLOWING APPENDICECTOMY

To the Editor of THE LANCET

SIR,—Since apparently very few instances of urinary fistula following appendicectomy have been recorded the following case may be of interest to surgeons.

A very fat woman, aged 45, was operated upon for acute appendicitis, the abdomen being opened by a lower right paramedian incision, and a perforated gangrenous retrocaecal appendix removed. A length of corrugated rubber dam was left draining the pouch of Douglas and was brought out of the abdominal wound at its lower extremity. The patient was nursed in the high Fowler position. On the fifth day following the operation the dressings were reported to have an ammoniacal smell. It was suggested that the ureter or the bladder had been injured during the operation or that the pressure of the drain had caused a portion of the bladder wall to slough. There remained, however, the onus of proof

that the suspected fluid was in fact urine. The flow was not great enough to enable any to be collected for examination, so indigo-carmino was injected intravenously and shortly afterwards the dressings at the lower angle of the wound were seen to be stained blue. The patient died of general peritonitis. At autopsy the whole intestinal tract was grossly distended. There was no free fluid in the general peritoneal cavity and no intraperitoneal staining. A probe passed into the bladder emerged at the lower end of the wound and on further dissection a patent urachus extending up to the wound was displayed. It is believed that the explanation of the fistula is as follows: either the patent tract was punctured by a needle in picking up the inner leaf of peritoneum while closing this layer, or possibly the tube may have caused necrosis by pressure, in support of which is the observation that the urine did not begin to escape until the fifth day after the operation.

This latter observation raises the question of the best site of emergence of drainage-tube or dam in cases of incisions below the umbilicus whenever drainage has yet to be employed. As far as I can ascertain most surgeons bring the drain out through the lower angle of the wound; but it was pointed out to me by Mr. Frankau that this was bad practice, for the following reason. It is generally agreed that the point of emergence of a drain may leave a weak spot, and this cannot be satisfactorily controlled by any form of belt if it is at the lower end of an incision in this region; whereas, at the upper (umbilical end) a belt can readily be fitted. Two lesser advantages may possibly also be claimed for bringing the drain out of the upper end of incisions made below the umbilicus, but I do not wish to give them the same emphasis: (1) if draining through Battle's pararectal incision there is less likelihood of a secondary hæmorrhage from pressure on the deep epigastric vessels, and (2) if corrugated dam is used it will separate omentum and intestine from the back of the peritoneal suture line as it lies in the length of the wound, and so perhaps diminish the chance of adhesion formation.

I am, Sir, yours faithfully,

VICTOR RIDDELL,

Surgical Chief Assistant, St. George's Hospital, S.W.
Oct. 22nd.

A PECULIAR BODILY DISPROPORTION

To the Editor of THE LANCET

SIR,—The significance of external physical characters has received relatively little consideration, except where gross disproportion, amounting to deformity, is present. And I should not have asked you to give space to this preliminary communication on the subject if a question put to me by H.M. coroner for the metropolitan district of Essex had not caused the lay press to call attention to the subject. A series of measurements on a post-mortem population of about 500 bodies has, I think, revealed a peculiar correlation between the "trunk-leg ratio" and certain other abnormalities.

In 17 cases the leg-length, measured from the top of the great trochanter to the heel, was greater than the trunk length, measured from the top of the great trochanter to the vertex. In all these persons I found that—

1. The aorta was strikingly narrow;
2. The thymus gland was present, and varied in weight from $\frac{1}{4}$ oz. to $1\frac{1}{4}$ oz.;
3. The spleen was rather large, and the Malpighian bodies were strikingly prominent;

4. The mesenteric glands were unusually large and numerous.

Two of the cases were sudden deaths under anaesthesia, and the other 15 were suicides. Now, these 15 cases represent 75 per cent. of the total cases of poisoning in the age-groups 14 to 35 in my whole post-mortem population. It seems clear, therefore, that, either 75 per cent. of the population of this country in this age-group possesses these characteristics, or that persons of this type have such mental characters as may lead to suicide. But I possess records of 101 bodies between the ages of 14 and 35 in which death was not due to suicide or anaesthesia; and only 4 of these showed the external and internal peculiarities to which I am calling attention. This small number of persons showing such characters in the second group does suggest that the first group consists of abnormal persons.

Later I hope to present the findings in detail, but the thesis I wish to defend here is that persons with leg-length more than 50 per cent. of the total body-length are liable to sudden death under anaesthesia and, further, that persons of this type are potentially suicidal. It also appears to be justifiable to state that persons with this external peculiarity will be found to possess an excess of lymphatic tissue. A striking manifestation of this excess is the presence of thymic tissue at an age when it would normally have disappeared (after the age of 14 years).

It seems to me possible that some anaesthetic deaths would be avoided if measurements were taken before anaesthesia were started. It would also be valuable to know whether this peculiar bodily disproportion is commoner among the inmates of mental hospitals than in the general population.

I am, Sir, yours faithfully,

Park-square West, N.W., Oct. 17th.

A. PINEX.

ATTITUDE OF SURGERY TO HÆMATEMESIS

To the Editor of THE LANCET

SIR,—I am flattered that any words penned by me should attract the attention of such a distinguished and erudite physician as Dr. Lothby Tidy; furthermore, I rejoice to find that his peroration coincides almost verbatim with one of the opening paragraphs in the address published by me in THE LANCET of Oct. 12th, and that he too urges "the treatment of each case individually, with an open mind, and with the coöperation of medical and surgical acumen." This indeed is the very burden of my paper, a closer liaison between physician and surgeon in these difficult cases. I trust that the weight of Dr. Tidy's authority may promote that coöperation and consultation that we both desire.

A second glance at my paper should demonstrate to Dr. Tidy that the indications for surgical interference are clearly and fully set out therein; he will also find figures of my own, should he care to read. Of personal cases of hæmatemesis which have been admitted straight into my own wards or into private institutions I find that in point of fact I operate upon little more than one-third; difficulties in diagnosis, the general condition of the patient, and all that constitutes surgical judgment seem to deter me from interfering in a higher percentage; nevertheless, this small figure may not constitute the ideal. If Dr. Tidy will explore the possibilities of the blood-drip and early operation in the hæmorrhages of chronic ulcer, and if he will summon surgical aid in the first 24 hours, he will find anxieties slip off his shoulders.

There is, however, one further paragraph in his letter that cogently demands an answer, for he writes :

"Such a statement is manifestly absurd, and a study of Finsterer's original article gives the impression of the same exaggeration throughout. Neither his statements nor his statistics can be safely accepted nor deductions drawn from them."

Those who know their Herodotus and who recall the description given by the historian of Halicarnassus regarding certain pristine customs of an ancient people, will regret with me that a censor of the Royal College of Physicians should metaphorically resort to similar practices in his references to Prof. Hans Finsterer. Bonds of a long and intimate friendship with the Austrian professor compel me to protest indignantly against the charge of unreliability levelled against the distinguished surgeon—a surgeon of international repute, whom doubtless Dr. Tidy knows not, and almost certainly has never seen at work.

Surgeons all over the world are nowadays a band of brothers; the numerous surgical travelling clubs of this land which are constantly visiting continental clinics have done much to consolidate that spirit of fraternity. In the name of British surgery and especially in the name of the many British surgeons who have journeyed to Vienna, who have spent time with the professor, and who have seen this kindly, honest surgeon at work, I deprecate these reflexions on the value of his statements and figures.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 21st. G. GORDON-TAYLOR.

To the Editor of THE LANCET

SIR,—I do not wish to enter into the discussion on the attitude of surgery to hæmatemesis, but I was astonished to read the attack of Dr. Tidy on Prof. Finsterer, his statistics and conclusions therefrom. It is extraordinary that in a discussion like this Dr. Tidy (who obviously does not know Finsterer or his work) should dismiss the work of one who to those who know him professionally and personally is not only a great worker in the cause of progress in gastric surgery, but is also the very soul of honour as regards the truth of his statistics.

As one who has known Finsterer for many years and has visited and worked with him frequently may I assure Dr. Tidy that Finsterer's statistics can be safely accepted and that in his hands and with his methods the operation gives the results he claims. I have discussed this hæmatemesis question with him on several occasions and have seen some of his cases and the results I have seen bear out the statistics.

I am, Sir, yours faithfully,

Nottingham, Oct. 21st. W. F. NEIL.

To the Editor of THE LANCET

SIR,—I, in common with many of my friends and colleagues, have enjoyed the hospitality of Prof. Finsterer in Vienna. He has with me, as with many other visitors, willingly shared his experience and demonstrated beyond any doubt the safety and certainty of his technique. We went in doubt, we saw with appreciation, and the conviction which naturally followed was real enough profoundly to modify our own technique. It is therefore impossible to allow the comments on Prof. Finsterer's fundamental honesty, made by so distinguished a physician as Dr. Letheby Tidy, to pass without protest. My

concern is, I am sure, shared by many others whose experience has been similar to mine.

I am, Sir, yours faithfully,

HENRY W. S. WRIGHT.

Weymouth-street, W., Oct. 21st.

To the Editor of THE LANCET

SIR,—Anyone who has been fortunate enough to see Prof. Hans Finsterer treating a case of severe hæmatemesis by "immediate operation" would scarcely be inclined to endorse the attitude that Dr. Letheby Tidy adopted in his letter to your journal last week. We are all aware that the interpretation of medical and surgical statistics is open to some criticism, but I would be very hesitant to agree with the suggestion that neither the statements nor statistics of this celebrated surgeon can be safely accepted. Those patients of Prof. Finsterer's that I have seen in this connexion were ample testimony to his teaching. As little delay as possible, a most meticulously careful operation under local anaesthesia, and avoidance of traction on bowel and mesentery were the principal lessons that I brought away with me.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 21st. T. HOLMES SELLORS.

To the Editor of THE LANCET

SIR,—Dr. Tidy's letter prompts me to offer a comment on Mr. Gordon-Taylor's indications for surgery in hæmatemesis—those given in the body of his paper as distinct from his peroration. I agree that the drip method of giving a large blood transfusion promises to make the treatment of "severe" hæmatemesis a more straightforward and less anxious matter than it has been. Let every severe case be so transfused at once; and let every case (cirrhosis excepted) in which pulse-rate, clinical condition, and hæmoglobin estimations indicate the persistence of copious bleeding be operated on while the transfusion continues. The results of following that working rule will teach us more than any further elaboration of old statistics, such as Dr. Tidy asks for.

I should not assume out of hand, however, that drip transfusion will make all gastric operations on the recently exsanguinated equally safe. Where I ask the surgeon to intervene I should still beg him to stay the bleeding with the minimum procedure—e.g., the ligation of arteries rather than resection of the stomach. The latter, if indicated, can usually wait for a few weeks. So also can most of the operations (for large or adherent or long-standing ulceration, for hour-glass stomach, &c.) listed under Mr. Gordon-Taylor's number 4. These operations will often be gastrectomies, and although the large drip transfusion may restore the patient's hæmoglobin to normal within 48 hours after his hæmatemesis, it does not follow that the patient himself is then in the best condition to undergo a gastrectomy. Rest and suitable feeding may well improve him further and so reduce the surgical risk. There is a danger that the new transfusion method may be discredited if too much is asked of it.

I am, Sir, yours faithfully,

R. S. AITKEN.

British Postgraduate Medical School, Oct. 21st.

PRINCESS MARGARET ROSE HOSPITAL FOR CRIPPLED CHILDREN, EDINBURGH.—Plans for the erection of a new ward at this hospital have been passed at the Dean of Guild court. The ward will cost £5500 and will accommodate 25 children, thus bringing the capacity of the institution up to 100.

THE HEALTH RESORT AS NATIONAL ASSET

A CONFERENCE IN BRUSSELS

SOME striking observations on the social and economic aspects of watering-places were made by Prof. RENÉ WYBAUW in a presidential address to the International Society of Medical Hydrology which held its annual meeting in Brussels from Oct. 12th to 17th. In these days, he said, it is the economic argument that appeals to governments and public bodies, and he recalled an investigation he had made in 1912 to discover the effect of additional publicity on a health resort. He had been astonished to find that when the town of Spa and its establishments increased their receipts by 29,000 gold francs the gain to the State (through railways, post office, &c.) amounted to 265,000 francs. Similar investigations at Ostend confirmed this conclusion—namely, that the State received ten times as much as the spa which spent the money. Post-war experiments at Spa produced the staggering information that this little town, receiving nothing from the State in exchange, simply by the intelligent use of its natural waters, brought to the Belgian Government an income of 12 million francs, not to mention 3 million in taxes on games. This calculation could be repeated for all the spas of the world. In certain countries indeed the governments had acquired the spas for themselves. Thus the most beautiful spa in the west of Europe, Vichy, belonged to the French Government, which administered it through a powerful company; Aix-les-Bains had just been endowed with a splendid establishment; Nauheim belonged to Hesse, and Kissingen and Reichenhall to Bavaria, and these have had magnificent establishments constructed for them by the Government. In Poland, Czechoslovakia, and Yugoslavia similar examples were to be found; in Italy the luxurious Salsomaggiore belonged to the State, and even in the little country of Luxembourg Mondorf was State-owned. In other countries taxes were instituted which covered publicity; elsewhere, again, important reductions were given on the railways to all travellers to the spas. In short, the "thermal industry" was everywhere encouraged on account of the large receipts which it brought to the State. Except, however, in certain countries where the governments were actual proprietors, there was a conspicuous disproportion between any sacrifice made by the State for the spas and the enormous receipts received by it through those spas. In Belgium just before the war the Government was much interested in Spa, formed a commission to study its needs, and took upon itself the expense of necessary new work at the establishments. After the war the broken establishments were put in order by the Government. But the anomaly remains, that the State now receives twelve times more in receipts through this spa than those who pay the costs of upkeep, and that it takes no regular share in the necessary expenses, although a new sympathy and understanding is happily gradually emerging.

On the medical and philanthropic sides, said Prof. Wybauw, diseases which pharmacological remedies cannot touch, such as rheumatism and circulatory troubles, are now being successfully treated at the spas. Unfortunately the expense is great, and in many countries, such as France, Germany, Switzerland, and England, an effort is being made to make the spas accessible to the purses of all citizens. The

height of "thermal organisation" is in Soviet Russia, where these cures are obligatory and where sickness insurance includes treatment at the spas as one of the most important elements of public health. Nowadays such charges cannot be imposed on the localities, and the State should undertake and organise the thermal treatment of the poor. The problems are vast, and the nations have need of the coöperation, the skill, and the research of their hydrologists. The situation also has its dangers. The mixture of purely scientific with economic interests sometimes raises issues between different nations in which the high purpose of scientific research is imperilled. In spite of the national egoisms of the present age, he trusted that the members of the society, in addition to searching after knowledge, would always cultivate a wide spirit of humanity and develop all those things which unite men of goodwill.

In welcoming the society to Brussels on behalf of the Minister of the Interior and of Hygiene, Dr. TIMBAL said that countries which realised the importance of their medicinal springs and made the necessary sacrifices for their development created thereby a factor of great importance in national prosperity. The valuable methods used must not be reserved for a privileged class. On behalf of the University of Brussels Prof. HÉGER-GILBERT, its administrator, welcomed the society as a body which was labouring to detach from empiricism a branch of medicine particularly fruitful in therapeutic results.

OTHER SUBJECTS DISCUSSED

The reports and discussions of the conference covered an unusually wide ground.

Dr. W. G. WILLOUGHBY (Eastbourne) in a paper on Marine Therapy described a novel method for continuous readings of relative humidity, showing that the proportion might vary in one day from 20 per cent. to 80 per cent. He said that inquiries from convalescent homes for children go to show that "seaside conditions" have a specific effect on ~~saturnal~~ affections and cervical gland enlargements.

Several papers dealt with Carbo-gaseous Baths. Drs. GUILLEAUME and MARCEL WYBAUW (Spa) contributed a physiological and clinical study with extensive recent bibliography. Dr. WAUCHER (Nauheim) emphasised the increased circulation and capillary activity, apparently due to the formation of a histamine-like substance in the skin; and Dr. DESCHAMPS (Royat) dwelt on the disappearance of arterial spasm and the cumulative and persistent effects of such baths on the circulation.

In a discussion on the therapeutic action of Peloids (semi-solid bath media) the veteran Prof. SCHENK (Belgrade) described and illustrated the formation of the Russian *limans*, the composition of the muds and their irritant action on the skin. Diluted mud baths and packs (*médallions*) are much used in the Soviet Republics for the painful *maladies* "which transform the workers into invalids," and so contribute to the solution of a serious social problem. Prof. PRISANI (Montecatini) distinguished volcanic peloids (*fangi*) as stimulant, solvent, or sedative, each having its own indications, and described recent research work in Italy. Dr. LENOCK (Prague) discoursed on the peats first used medically in Czechoslovakia just a hundred years ago. Dr. W. BENADE said that peloids were now examined at the Geological Institute at Berlin, especially in regard to their organic contents and reaction, varying from 0.1 to 9.0 pH, as well as their plasticity, water-holding capacity, thermal conductivity, and retentivity, and the amount of heat which can be transferred to the body in the peloid bath or pack.

At the general meeting of members resolutions were passed on the subject of Medical Ethics for Spa Practitioners, as recommended in the society's

journal, the *Archives of Medical Hydrology*, last July. The report of the standard measurements committee, presented by Mr. JUDD LEWIS, D.Sc., was received and the name "peloids" adopted, defined, and divided into a fourfold "fundamental classification."

After visits to Spa and Luxembourg the meetings concluded with a luncheon and discussion at the Palais des Thermes at Ostend.

LONDON MEDICAL EXHIBITION

THIS exhibition was opened on Monday and will remain open until 6.30 P.M. on Friday. Over 150 exhibitors took part and the stands were attractively displayed. A brief notice of some of the many products on view is given below.

Drugs and Pharmaceutical Preparations

(90) ALLEN AND HANBURYS LTD. (Bethnal Green, E.), in addition to their wide range of standard products, introduced a number of new preparations, including Calcydic, granules containing dicalcium phosphate, vitamin D, and glucose in a chocolate-flavoured base; Alkagen Glucose granules containing magnesium hydroxide with glucose and oil of peppermint; Proctocaine, a local anæsthetic; and Tannic Acid Jelly for burns.—(61) THE ANGIER CHEMICAL CO., LTD. (86, Clerkenwell-road, E.C.), showed their familiar emulsion, and emphasised the value of their Sagradol laxative emulsion containing mineral oil and cascara perfectly blended.—(116) THE ANGLO-FRENCH DRUG CO., LTD. (11 and 12, Guilford-street, W.C.), showed a number of pharmaceutical preparations, new and old, also the products of Modern Pharmaceuticals Ltd. (12, Guilford-street, W.C.), and especially noted Phospho-Soda (Fleet), a non-toxic, highly concentrated aqueous solution of the primary sodium phosphate, free from syrup, glycerin, or oil; it can be used to correct hyperacidity and constipation and promotes the general functions of the liver and intestinal muscles.—(19) ANTIBODY PRODUCTS LIMITED (Watford, Herts) had on view a new preparation, British Grass Pollen, for the desensitisation treatment of hay-fever and British Bee Venom for rheumatism which, they recommend, should be used in conjunction with Antibacsyn for rheumatoid arthritis.—(7) ARMOUR AND COMPANY, LTD. (Armour House, St. Martin's-le-Grand, E.C.), showed their range of well-known gland preparations, including liver extract and pituitary posterior lobe ampoules.—(44) BAYER PRODUCTS LTD. (Africa House, Kingsway, W.C.) selected for mention a new vitamin-C preparation, Cantan, used for infant anæmia as well as scurvy; Bioferol, a new nutrient tonic of hæmoglobin, iron, and liver, for children and convalescents; and Festan, a stable preparation of pancreatic enzymes in dragées coated with an acid-resistant substance, for the treatment of intestinal affections and to free the intestine of gas before X ray investigation.—(5) BENGUE AND CO., LTD. (24, Fitzroy-street, W.1), stressed Cytobiase, an extract of fresh cod liver in a glycerin base; Iodeopirine, a non-toxic iodine preparation combined with acetylsalicylic acid with an activity 20 times greater than that of the acetylsalicylates; and Noseptyl, a mixture of ephedrine, menthol, and pine maritime in a paraffin base.—(87) BISODOL LTD. and ANADIN LTD. (12, Chancery-street, W.C.) showed their well-known products for indigestion and headache.

(37) BOOTS PURE DRUG CO., LTD. (Nottingham), in addition to their familiar Novostab, Stabilarsan, and Sulphostab, reminded visitors of their Hepastab, a liver extract for intramuscular injection, and their Insulin (Boots), accurately standardised and sterilised; and introduced Sodium Mandelate (Boots) for the treatment of urinary infections without preliminary neutralisation.—(122) BRITISH COD-LIVER OIL PRO-

DUCTERS (HULL) LTD. (St. Andrew's Dock, Hull) emphasised the guaranteed quality and potency of their product and showed visitors photographs illustrating the care which is taken to maintain perfect hygiene throughout the preparation, from the trawler to the bottle.—(140) BRITISH DRUG HOUSES LTD. (Graham-street, City-road, N.) showed their sex hormone preparations, notably Estroform, Estroform "B," and Progestin B.D.H. and the new Gonan, an exceptionally pure standardised preparation of the gonadotropic hormone from the urine of pregnancy; Ergometrine, a quickly acting water-soluble alkaloid of ergot; the Mandelic Acid B.D.H. Outfit designed to facilitate the use of the drug in urinary infections; and various vitamin products.—(144) BURROUGHS WELLCOME AND CO. (Snow Hill-buildings, E.C.) had an illuminated stand where visitors might examine for themselves crystals of their 100 per cent. pure Insulin and Digoxin, the stable preparation of digitalis; they also showed a new product Ergometrine and their Tarrafax Brand Tannic Acid Jelly, Kepler cod-liver oil, and serological products.

(1) G. W. CARNRICK CO. (Brooks and Warburton Ltd., 232, Vauxhall Bridge-road, S.W.) exhibited their well-known glandular preparations Hormotone, Incretone, and Thelestrin, and introduced Pitrantrin, an anterior pituitary-like hormone.—(165) THOS. CHRISTY AND CO., LTD. (4/12, Old Swan-lane, E.C.), had on show a range of products, including Musterole Brand magnesia oil and mustard ointment; Estivin for hay-fever; Glycothymoline; and Lysoform disinfectant.—(13, 14) COATES AND COOPER LTD. (94, Clerkenwell-road, E.C.1), distributors for TEMMLER CHEMICAL WORKS, THE BIO-CHEMICAL LABORATORIES LTD., GOMENOL LABORATORIES, DESITIN WORKS, AMERICAN APOTHECARIES CO., CHEMICAL WORKS H. MACK NACHF., DR. JOACHIM WIERNIK & CO., A.G., DR. THILO & CO., MÜNCHEN CHEMICAL WORKS, and RUSSI & Co., in addition to the well-known products of these firms, introduced a new preparation of their own, Cerocol (colloidal cerium oxalate) for sea-sickness and air-sickness; and a new preparation by Russi and Co., Salepsil, intended to combine the sedative and hypnotic action of ethylphenylbarbituric acid with the antispasmodic action of valerian, the antivagal and hypocritic action of stramonium and of scopolamine, and the laxative effects of cascara sagrada; Mack's "Forapin" Bee Venom Salve for rheumatism; and the Ivago Brand Antipyrorrhæa Vaccine.—(3) CONTINENTAL LABORATORIES LTD. (30, Marsham-street, S.W.1), in addition to their Taxol, showed Crinex, a non-albuminous alcoholic preparation made from the follicular secretion of the ovary; and Antipeol, a vaccine filtrate containing the antiviral for staphylococcus, streptococcus, and pyocyanus.—(117, 118, 138) CROOKES LABORATORIES (Park Royal, N.W.10) picked out from their colloidal preparations Halycalcine, useful for emotional disturbances at the period and the menopause; Estroform, the new orthoformic preparation containing 50 per cent. alcohol for asthma and spasmodic cough; Mercury Sulphide for syphilis and psoriasis; Colsul aqueous, originally recommended for artificial pyrexia in general paralysis but now found useful in epilepsy also; a new range of transfusion solutions for giving large quantities of liquid intravenously, and a new preparation of aspirin, Collopyrin, put up in phials from which the label can be torn when they are given to a patient and which is marketed only to doctors.

(97) J. C. EXO LTD. (Pomeroystreet, S.E.) showed their well-known fruit salt.—(149, 150, 160) EVANS SONS LESCHER AND WEBB LTD. (56, Hanover-street, Liverpool) had a display of chemicals from which they selected for mention Colliron, colloidal iron containing 10 per cent. of iron and a minute trace of copper for massive iron therapy; diphtheria prophylactics in single and multiple doses; antitoxins of all kinds, and Hepatex I-M, solution of the liver fraction suitable for intramuscular injection, non-toxic and non-depressant.—(70) FASSETT AND

JOHNSON, LTD. (86, Clerkenwell-road, E.C.), drew attention to Otoferrin brand colloidal iron tonic; Zomite brand chloramine pessaries, a convenient non-greasy contraceptive and antiseptic; Burson Lastex yarn stockings; and the Seabury and Johnson series of dressings and plasters; and mentioned that Argyrol is now put up in tablets without a binder.—(10, 11) GENATOSAN LTD. (Loughborough), in addition to their well-known Sanatogen, Genasprin, Formamin, and detoxicated vaccines, had a new series of preparations called the Fissan Brand Products, incorporating an improved physical method of applying medicaments to the skin, in the form of powders, pastes, and lotion, and also anal ointment and suppositories.

(95, 96, 109) GLAXO LABORATORIES (56, Osnaburgh-street, N.W.) showed their popular food and vitamin products, and introduced Dissolved Vaccines, G.L., an entirely new vaccine preparation; it dissolves the bacteria and renders their products non-toxic without in any way impairing their capacity to produce antibodies.—(121) C. J. HEWLETT AND SON, LTD. (35/42, Charlotte-street, E.C.), had a number of original preparations on view, notably their Antiseptic Cream for eczema and abrasions; Coneuro, a nerve tonic; Heptagen, an aperient and cholagogue; Mist. Pepsinæ Co. c. Bismutho; Tannic Acid Jelly for burns; Fornalgar, a mouthwash and gargle; and Evapogens, a series of medicated skin lotions containing spirit.—(71) HOFFMANN-LA ROCHE CHEMICAL WORKS LTD. (51, Bowes-road, N.), in addition to Imadyl brand histamine, Prbstigmin, a peristaltic stimulant, also useful for relief of myasthenia gravis, and other well-known products, showed Larostidin, a histidine preparation for peptic ulceration; and Redoxon, synthetic vitamin C.

(86) HOUGH, HOSEASON AND CO., LTD. (2, Bridge-street, Manchester), had a range of products, including Tab. Arthritone for rheumatoid arthritis, and Tab. Eclectol Co., a combination of alkaloïds having a katalytic action on hormonal activity; and Formic glycerophosphates.—(45) HOWARDS AND SONS, LTD. (Ilford), showed their wide range of pure chemicals, especially stressing Quinisan, quinine bisalicylosalicylate for colds and influenza; their anæsthetic ether, carefully tested and purified; and had an exhibit showing the difference between the different densities of bismuth carbonate and the advantages of a light form for certain purposes.—(63) JOHNSON AND SONS (Hendon, N.W.) showed Estersal, a mixture of the ethyl and propyl esters of salicyl glycolic acid for the relief of rheumatic affections.—(166) KAYLENE LTD. (Waterloo-road, N.W.) had on view their preparations of colloidal kaolin, Kaylene-ol, Carbokaylene, and Kaylene Opaque Meal.—(119) LACTÉOL DU DR. BOUCARD (30, Rue Singer, Paris) showed their many preparations of lactic ferments, and Viatol, a vitamin tablet.—(29) WM. MARTINDALE (12, New Cavendish-street, W.) pointed out Calvitone, an assimilable calcium vitamin tonic with a cod-liver oil equivalent of 33 per cent.; and Sterules Iodo-Ray, a radiographic medium for pyelography and urography, a halogen derivative of hippuric acid in aqueous solution containing also dextrose to minimise the loss by solution into the tissues.

(148) MENLEY AND JAMES LTD. (64, Hatton-garden, E.C.), in addition to their Iodex, had two new preparations: Calsiod for rheumatic and arthritic conditions; and Benzredine inhaler, exhibiting greater potency than Ephedrine without irritation.—(103) H. R. NAPP LTD. (3 and 4, Clement's Inn, W.C.), among their many preparations, introduced Sedonan, a 5 per cent. solution of phenyldimethyl, pyrazolon, and anhydrous glycerin for the relief of inflammatory conditions in the ear; Ferro-Hepamult, a liver product in sugar-coated granules for anæmia; and Hepamult, their standardised liver extract, cheaper to use than fresh liver.—(120) OPPENHEIMER SON AND CO., LTD. (Handforth Laboratories, Clapham-road, S.W.), showed their Palatinoid and Bi Palatinoid products and various Alphidine compounds including the latest, Alphidine with guaiacum resin and sulphur precipitation, for rheu-

matic conditions.—(80) ORGANON LABORATORIES (1, Gordon-square, W.C.) had on view their Pregnyl, a gonadotropic hormone of pregnancy in a form which retains full activity over long periods; Menformon (Keto-hydroxyœstrin) in oily and aqueous solutions and vaginal suppositories; and Pernaemon Forte, a protein-free cod-liver extract of controlled hæmopoietic activity.—(73) Oxo LTD. (Thames House, Queen-street-place, E.C.), in addition to their well-known beef extracts and Lab-Lemco, a standardised extract for culture media, showed their Oxoid organo-therapeutical preparations, notably Hormonoxoid another pluriglandular tonic extract for injection; and Liveroid, Oxoid liver extract for injection, and Erythroid (desiccated gastric tissue) for anæmia.

(64) PARKE, DAVIS AND CO. (Beak-street, W.) selected from their range of products Antuitrin "Growth," a concentrated preparation of growth hormone from the anterior lobe of the pituitary gland, standardised on female rats; Gonococcus Soluble Toxin (Corbus-Ferry) grown in a special medium and used by intradermal injection; Staphylococcus Vaccoid, a mixture of staphylococcus toxoid and vaccine constituting a complete staphylococcal antigen; and Tuberculin P.P.D., tablets containing the purified protein derivative obtained from standard tuberculin by the method of Florence B. Seibert.—(75) PETROLAGAR LABORATORIES LTD. (Braydon-road, N.) had added to their Petrolagar compounds a pleasant non-bitter Petrolagar with Cascara, for those accustomed to doses of this drug; and Kaldrox, an emulsoid developed by activating colloidal kaolin with aluminium hydroxide gel, used for colitis, flatulence, and diarrhoea and in the treatment of peptic ulcer.—(99) PHARMACEUTICAL SPECIALITIES (MAY AND BAKER) LTD. (Dagenham, London) picked out for special mention Stellidin, a 4 per cent. histidine solution put up in ampoules for intramuscular injection for the ambulatory treatment of peptic ulcer; Sónalgin, a compound of soneryl and amidopyrin; Vinyl Ether, a new anæsthetic giving rapid and complete relaxation without sickness; and Ergometrine, a water-soluble, quick-acting alkaloid ergot given orally or intramuscularly.—(155) REED AND CARRICK (CANADA) LTD. (Distributors: Coates and Cooper Ltd., 94, Clerkenwell-road, E.C.), from among their range of endocrine products pointed out Nephritin, composed of cortex and convoluted tubules of the kidney; and introduced Tonicine, a new male and female gonadal tonic and restorative combined with strychnine and glycerophosphates.

(147) SANDOZ PRODUCTS (J. FLINT) (134, Wigmore-street, W.) among their many products had some new preparations, notably Bellergal, a compound of belladonna, Femergin and phenyl-ethyl-malonylurea for autonomic nervous disorders; they also pointed out the value of Femergin (ergotamine tartrate) for migraine; and Quinine-Calcium, intravenous and intramuscular injections, recommended for its preventive action against the penetration of toxins in acute infections.—(27, 28) SAVORY AND MOORE LTD. (143, New Bond-street, W.) showed their many products, including Medilax, a silver-coated vegetable pillule for constipation; Urotropal, their urinary antiseptic; and their Fructoles preparations, offering many medicaments in palatable solution; also Nembutal (Abbott) for short hypnotic and long sedative action, and Bromural (Knoll), a soporific.—(47) SCHERING LTD. (188-192, High Holborn, W.C.) selected from their range of medicinal products Progynon, for ovarian hypofunction; Proluton, corpus luteum hormone; Neotropin, a urinary antiseptic, to be combined with Cylotropin in obstinate cases, and their well-known Veramon, Medinal, and Uroselectan B.—(25a) SCOTT AND BOWNE LTD. (10, Stonecutter-street, E.C.) claimed for their Halivite cod-liver oil a vitamin potency of 1500 international A units and 200 international D units; and, in addition to the plain oil and pills, now make a malt and cod-liver oil extract for which they claim high potency.—(164) SHARP AND DOHME LTD. (76-78, City-road, E.C.), among their range of medi-

cements, pointed out that they were the first to introduce the single-dose treatment for diphtheria prophylaxis; they also showed their staphylococcus toxoid; Solution S.T. 37; and S.T. 37 Sucrets for mouth disinfection.—(153) TONICITY LABORATORIES, LTD. (20–24, Emerald-street, W.C.), showed their preparation Halmagon for administering the halogen compounds of magnesium.—(33, 34) WILLIAM R. WARNER AND Co., LTD. (300, Gray's Inn-road, W.C.), in addition to their Veganin, recommended for influenza, introduced Vince, a new antiseptic powder which in solution yields about 9.5 per cent. of nascent oxygen.

Foods, Drinks, and Vitamin Preparations

(135) ALLEN AND HANBURY'S LTD. (Bethnal Green, E.) showed their series of scientifically arranged foods for infants from birth to weaning, and their special half cream milk food, milk food with additional iron, whey, and cereal; also cod-liver oil, orange juice, and the combination in Haliborange.—(93) BOVril LTD. (148–166, Old-street, E.C.) showed their popular meat extract and stressed the Invalid form, devoid of seasoning, more highly concentrated, and with a greater albuminoid content.—(84) BRAND AND Co., LTD. (Mayfair Works, Vauxhall, S.W.), showed their pure raw meat juice; essences of beef and chicken; meat lozenges; and Brandox, preserved by a new method—the addition of malt extract instead of salt, which incidentally adds vitamins A, B, and D.—(100, 101) CADBURY BROTHERS LTD. (Bournville) once again dispensed heartening drinks of Bourn-vita and offered samples of their chocolate.—(46) CORN PRODUCTS Co., LTD. (Bush House, W.C.), showed their Dextrosol Brand Dextrose, identical with the sugar of the blood and tissues; and Karo syrup for infants and children, a mixture of non-irritating sugars in which the first digestive step has been accomplished.—(77, 78, 79) COW AND GATE LTD. (Cow and Gate House, Guildford, Surrey), in addition to their milk foods, displayed Frailac, a milk food with low fat and protein content for frail infants; Hemolac, a full cream milk food containing iron ammonium citrate; Lacidac, lactic acid milk powder, and especially Daltose C.G., a carbohydrate mixture containing maltose, dextrose, soluble dextrins, and vitamin D.—(115) ENERGEN FOODS Co., LTD. (Willesden, N.W.), had added to their Energen bread and other dietary preparations, Energen Cocoa, and a pleasant flavoured, unsweetened bramble jelly.—(163) GRANOSE FOODS LTD. (Watford) showed their dietetic foods, including Granose biscuits, consisting of pure wheat grain, and Granovita gluten bread for diabetes and obesity.—(72) HEUDEBERT DIETETIC PRODUCTS (Mount Pleasant, Alpertown, Middlesex) showed their many food products, especially those for diabetes, dyspepsia, obesity, and cardiovascular and hepatic disorders; and introduced Feculyse powder, a wheat-germ preparation flavoured with caffeine-free coffee, giving a diastase action very useful in cases of starch indigestion.—(108) HOVIS LTD. (London) had a display of the bread and cakes which can be made from their whole meal wheat flour containing vitamin B.—(112) INGRAM AND ROYLE LTD. (45, Belvedere-road, S.E.) showed the mineral waters for which they are agents, notably Vichy Célestins, Contrexéville-Pavillon, Karlsbad Water and Hunyadi Janos aperient water.—(49) KEEN, ROBINSON AND Co., LTD. (Carrow Works, Norwich), in addition to their Robinson patent barley and groats and Almata synthetic infant food, pointed out their mustard ointment, which can be applied directly as a poultice without any preparation, and their new Lemon Barley Water for the rapid preparation of a pleasant beverage.—(139) LEVER BROS. LTD. (Port Sunlight) showed their vitamin A and D products Essogen and Advita; Essogen is vitamin A, free from D, with a blue value of 2000, and Advita is A and D together, with an A value of 1250 and a D value of 1000 international units.

(146) THE MARMITE FOOD EXTRACT Co., LTD. (Walsingham House, Seething-lane, E.C.), presented

again their vitamin-B preparation and mentioned its anti-anæmic properties, the latest work on which has been incorporated in a new issue of their medical booklet.—(68, 69) NESTLÉ AND ANGLO-SWISS CONDENSED MILK Co. (6–8, Eastcheap, E.C.) showed their milk and cream preparations, and Lactogen dried milk in a new and attractive packing; and introduced Eledon, a dried buttermilk.—(50) PHILLIPS YEAST PRODUCTS LTD. (Park Royal-road, N.W.) had a stand to remind the medical profession of the value of live yeast in the treatment of many conditions, including anæmia, and pointed out that their preparation contains 1140 international units of vitamin B₁ per ounce.—(136) SISTER LAURA'S INFANT AND INVALID FOOD Co., LTD. (Springfield Works, Bishopbriggs, Glasgow), showed Sister Laura's preparation for rendering milk digestible; and Zomogen, a liquid restorative without metallic iron.—(126, 127, 128, 129, 130) TRUEFOOD LTD. (Bebington, Wirral, Cheshire) showed their humanised and full cream dried milks; and Secway, a whey preparation for premature infants and the treatment of digestive disorders.—(125) VIROL LTD. (Hanger-lane, Ealing, W.) attracted visitors by an illuminated graph showing the growth in weight of children on Virol, halibut-liver oil, and cod-liver oil respectively. The Virol growth corresponded almost exactly with the standard weight increase while the others fell below it. It was suggested that the cod-liver oil lacked protein and mineral salts and halibut-liver oil contained rather too much vitamin A for some children.—(85) VITAMINS LTD. (23, Upper Mall, W.) presented Bemax, the only vitamin food which is daily assayed by the Birch and Harris bradycardia method; and Fertitol oil of wheat germ for the administration of vitamin E.—(89) VITMAR LTD. (Southfields, S.W.) showed their well-known preparations and food for diabetes, obesity, and the Ketogenic diets, especially stressing their cheap, low-carbohydrate Health Bread for slimming and the treatment of indigestion.

Surgical Instruments and Appliances

(90) ALLEN AND HANBURY'S, LTD. (Bethnal Green, E.), had a large display of surgical instruments, appliances, and equipment, notably the St. Bartholomew's Hospital operation table with self-locking device for any position and lateral tilting movement, mounted on a new platform base which increases stability and enables the surgeon to sit; electrical instrument sterilisers of new design fitted with heat switch and automatic cut-out; A and H Azoule catgut mounted on eyeless needles; instruments for the treatment of fractures by various surgeons; suction pumps for producing negative and positive pressure; and Dr. Letterman's foot supports.—(7) ARMOUR AND Co., LTD. (Armour House, St. Martin's-le-Grand, E.C.), emphasised the value of their new sterilised surgical sutures on eyeless needles of carbon steel for causing the very minimum of trauma, and mentioned that all their sutures and ligatures are tested for sterility in the pathological department of a London hospital.—(30, 31) ARNOLD AND SONS (50–52, Wigmore-street, W.), from among their display of surgical instruments and tables, picked out a new transformer for use off main A.C. supply for light and cautery burners; a new blood drip apparatus used by Marriott and Kekwick; Minnett's gas and air apparatus for maternity cases; and Baron's antidote bag, containing suitable treatment for poisoning cases. They pointed out that the dressings prepared by John Bell and Croyden are now periodically tested by the Bland Sutton Institute.

(59) AURAL APPLIANCES LTD. (135, Wigmore-street, W.) demonstrated the latest improvements to their Sonotone hearing aids, which can now pick out sounds from all directions; and also a neat radio aid which enables the deaf to hear broadcasts through any set by bone conduction.—(52) BRITISH ALKALOIDS LTD. (Winchester House, E.C.) showed their anti-septic T.C.P., a combination of chlorine and iodine with phenol and benzoic acid.—(145) CLEMENT

CLARKE LTD. (16, Wigmore-street, W.) picked out from their optical apparatus the new Admiralty Diagnostic Set; the new Livingston Malingers and Phoria Test; the Fincham Coincidence Optometer, a small training instrument for convergence insufficiencies; and facial masks for disfigurements.—(141) STANLEY COX LTD. (11, Gerrard-street, W.) stressed their ultra short wave diathermy equipment with many improvements; and their cathode ray electrocardiograph with a much finer photographic tracing than has hitherto been obtained.—(167) H. E. CURTIS AND SON, LTD. (7, Mandeville-place, W.), showed their range of supports, notably the Curtis Belt and corset belt En Mains Croisées.—(33A) CUNSON, GERRARD AND CO., LTD. (Oldbury, Birmingham), introduced their new elastic plaster bandage Ceraban which is free from rubber and antiseptic and far less irritating than older preparations; also Peptavin, a nutrient tonic peptone wine.—(65) THE DENVER CHEMICAL MANUFACTURING Co. (London, N.W.9) reminded the profession of the value of antiphlogistine antiseptic poultice.—(53, 54) DOMEN BELTS Co., LTD. (67, Welbeck-street, W.), among their various pregnancy, gastropnoxis and general support belts, showed a new corset belt for heavy figures and those suffering from weak abdominal muscles: special ribbons running diagonally give resilience and supple support.

(8) DOWN BROS., LTD. (21 and 23, St. Thomas's-street, S.E.1), picked out from their comprehensive selection of instruments several surgeons' special instruments for open operations for fracture and for pin and Kirschner wire traction, and Ferris Smith's instruments for external ethmoid operation.—(154) J. AND E. FERRIS LTD. (33, Museum-street, W.C.) showed the latest improvements in their light, strong artificial limbs, made in exact counterpart of the good limb to avoid self-consciousness.—(18A) HARMAN FRESE (32, Great Dover-street, S.E.1) showed their well known range of contraceptive appliances, and remarked that the Gamophile, extra thin, 3-ply rubber occlusive pessaries were receiving warm welcome from the profession.—(26) BRUCE GREEN AND CO., LTD. (14, Bloomsbury-street, W.C.), showed electric ophthalmoscopes and retinoscopes, and a number of models of optical trial cases, spectacles, and lenses.—(18) THEODORE HAMBLIN LTD. (15, Wigmore-street, Cavendish-square, W.) had a range of spectacles and ophthalmic apparatus and inexpensive diagnostic sets. They showed the Dobson amblyopia reader, printed in red and black and used with a red filter to cut out the red letters; the spinal spectacles, for reading while lying flat; a pocket torch with focal illumination; and the rising front bifocal spectacles, which lift the reading part when required.

(4) HANOVIA LTD. (3, Victoria-street, S.W.) had on view a new Alpine Sun Lamp representing the major advance in this apparatus since 1905; it has a self-starting apparatus, is economical to work, and gives great actinic intensity at any angle.—(38) HAWKSLEY AND SONS, LTD. (83, Wigmore-street, W.), had a range of instruments for blood diagnosis, stethoscopes, microscopes, and baumanometers.—(17) HINDERS LTD. (174, Estcourt-road, S.W.6) had a stand showing metal supports, foot supports, and plaster bandages, and pointed out their latest extra light, inexpensive adjustable foot support, embracing the metatarsal dome; the Vigger bandage for supporting the ankle and instep; and their Hygiaplast, packed in airtight, drop-proof patent containers and supplied on master spools to which new rolls can be fitted when required.—(2) THE HOLBORN SURGICAL INSTRUMENT Co., LTD. (26, Thavies-inn, Holborn Circus, E.C.), had a display of surgical apparatus, operating tables, and chromium-plated steel consulting room furniture, and pointed out especially an electro-surgical hand motor for drills, burrs, and saws; the Holborn fitted obstetric case, and Vienna model vaginal hysterectomy instruments.—(143) JOHNSON AND JOHNSON (GREAT BRITAIN) LTD. (Slough, Bucks) showed

their plasters and dressings, including the Drybak waterproof adhesive plaster, and introduced the Ethicon new process catgut prepared in such a way as to ensure absolute uniformity, complete smoothness, and extreme pliability.—(142) C. DAVIS KEELER LTD. (47, Wigmore-street, W.) picked out from their ophthalmic display a new wide angle ophthalmoscope at a reduced price; and a new operating auriscope in which the lens has been set back from the ear-piece to allow room for manipulation.—(35) THE LONDON HOSPITAL LIGATURE DEPT. (Whitechapel, E.) exhibited their ligatures, pointing out that the London Hospital Ligature Laboratories is the only place in England where sterile surgical catgut is made throughout from the animal intestine to the sterile tube.—(137) J. F. MACFARLAN AND Co. (32, Bethnal Green-road, E.), in addition to their anæsthetic ether (Keith's) and chloroform, pointed out their Bissettes chloroform ampoules for the second stage of labour; and Opoidine soluble, injectable opium for premedication and insomnia.—(43) MEDICAL SURGICAL SUNDRIES LTD. (97, Swinderby-road, Wembley) exhibited medical and surgical sundries of all descriptions.

(92) MONSOL LTD. (Vincent House, Vincent-square, S.W.) pointed out the Monsol Gel, Neo-Monsol in jelly form in collapsible unbreakable tubes; the jelly mixes instantly with hot or cold water and can even be used without water. They also showed Monsola nasal compound in dropper bottles at a reduced price.—(57) PEARSON'S ANTISEPTIC Co., LTD. (172, Buckingham Palace-road, S.W.), had added to their Iodine-Medol ointment, Medol analgesic ointment, and Creolin disinfectant, the new Creolin Soap, a super-fatted germicidal soap for toilet or surgical use.—(24) W. H. PETTIFOR (11, Victoria-street, S.W.) had increased their range of hearing aids by a new electrical stethoscope for deaf doctors which can be used either as a stethoscope or as a hearing aid and can be worked with a loud-speaker if desired.—(42) PORTABLE X-RAYS LTD. (Power-road, Chiswick, W.) had an interesting stand showing X ray negatives taken under all kinds of conditions, demonstrating the great advance made in radiography at home.—(23) RAYNER AND KEELER LTD. (100, New Bond-street, W.) showed a range of ophthalmological instruments and spectacles and said that special interest was being taken in a narrow beam ophthalmoscope and a prism illuminated auriscope.—(51) RECKITT AND SONS, LTD. (40, Bedford-square, W.C.), showed their non-toxic, non-corrosive germicide Dettol to which they have now added, in deference to the wishes of dentists, Deftolin mouth wash and gargle, a combination of Dettol and aromatics.—(12) W. J. RENDELL LTD. (161-165, Rosebery-avenue, E.C.) had on view once more their contraceptive appliances.

(88) THE SCHOLL MFG. Co., LTD. (182, St. John-street, E.C.), showed their supports and remedies for the relief and correction of foot troubles of all kinds.—(62) A. G. SHELDON AND Co., LTD. (3, Great Woodstock-street, W.), showed their sterilised surgical dressings and stock outfits, and emphasised their day and night service in all departments.

(66) T. J. SMITH AND NEPHEW, LTD. (42, Tavistock-square, W.C.), have put up their popular Elastoplast dressings in a doctor's set containing 117 dressings of various sizes and types; they also have wound dressings—lint and gauze pads medicated with 5 per cent. bismuth subgallate on the Elastoplast base; and Cellona plaster-of-Paris bandages and Cellona splints.—(6) THE SURGICAL MANUFACTURING Co., LTD. (83, Mortimer-street, W.), had a display of instruments including a new series of rectal and vaginal specula with proximal lighting, and a new universal syringe for continual local anæsthetic injection, aspiration, infusion, transfusion, and pile injection.—(36A) EDWARD TAYLOR, LTD. (Monton, Lanes.), showing their wide range of medicated plasters, emphasised that their elastic adhesive is guaranteed not to cause irritation.—

(97) THERMOGENE CO., LTD. (160, Piccadilly, W.), in addition to their popular medicated wadding, emphasised the value of Thermogene Vapour Rub for rheumatism and headache.—(161) VICTOR X RAY CORPORATION LTD. (15-19, Cavendish-place, W.) specially pointed out among their apparatus the Inductotherm short-wave diathermy machine employing an entirely new principle—that of electro-magnetic induction—for heat generation in the tissues; this instrument generates an alternating current of 12,000,000 cycles per second and the only applicator required is the flexible insulated cable wound round the part to be treated.—(105) "WAITES" ANTI-SEPTIC LOCAL ANÆSTHETIC (Cook's Laboratories, New York) showed a new product; a local anæsthetic with Cobefrin, a new vaso-constrictor without epinephrin reactions, as well as their various anti-septic preparations and Solila steel needles.—(123) WATSON AND SONS (ELECTRO-MEDICAL) LTD. (Sunic-house, Parker-street, W.C.) selected from their X ray and light apparatus the Sunic consulting-room outfit which is compact, simple, and perfectly safe and can be supplied in portable form; the latest type of mercury-vapour apparatus; and examples of infra-red apparatus.—(16) THE WILSON RUBBER CO., LTD. (85, Buckingham-avenue, Slough), in addition to their range of rubber gloves and sleevelets, introduced a new post-mortem apron made of pure crêpe rubber, absolutely resistant to every risk of the mortuary.

PARLIAMENT

NOTES ON CURRENT TOPICS

Reassembly of Both Houses

BOTH Houses of Parliament reassembled on Tuesday, Oct. 22nd, having been summoned, a week earlier than had been arranged, under the power given to the Speaker and the Lord Chancellor at the instance of the Government by resolutions passed at the adjournment for the summer recess early in August last. The emergency power to call members of both Houses together at an earlier date was exercised for the purpose of a debate on the international situation.

Increased Children's Benefit

On Oct. 22nd Mr. ERNEST BROWN, Minister of Labour, announced an increase in the children's allowance under unemployment benefit from 2s. to 3s. This increase was recommended by the Unemployment Insurance Statutory Committee in July. The new rate will come into force on Nov. 8th.

HOUSE OF COMMONS

TUESDAY, OCT. 22ND

Ex-Service Men in Hospital

Sir IAN FRASER asked the Minister of Pensions if he had considered the hardship caused to the families of many pensioners who lost unemployment assistance under the Unemployment Acts on entering a Ministry hospital, with the result that their families may be obliged to have recourse to rate aid; and if he could see his way to remedy this grievance.—Mr. R. S. HUDSON (Minister of Pensions) replied: Yes, Sir. The hardship involved in some of these cases has been brought home to me in the course of my recent visits to Ministry hospitals. As hon. Members are aware, a pensioner who is in work when he enters hospital for an approved course of treatment can be granted under the Royal Warrant an allowance, in lieu of pension, to make up his loss of income. With the approval of my right hon. friend the Chancellor of the Exchequer, I propose in future to apply this principle broadly to the case of men who are in receipt of benefit or assistance under the Unemployment Acts before entering hospital, but who are not eligible for the standard allowance. The administrative details have still to be

worked out, but briefly it is intended to pay in these cases a supplementary grant, in addition to pension, which will, within the limits of the standard warrant allowances, make up the man's income from these statutory sources to what it was before or would otherwise be had he not entered hospital, allowance being made for reduced family expense by reason of the patient's maintenance in hospital, and for any health benefit which he may receive in lieu of his unemployment benefit. This concession will, I am satisfied, meet the grievance hitherto felt by the disabled ex-Service men in question.

Unemployment Regulations

Mr. GREENWOOD asked the Minister of Labour whether the inquiry into the Regulations made under Part II. of the Unemployment Act, 1934, had been completed; and, if so, whether he could indicate the measures the Government proposed to take.—Mr. E. BROWN (Minister of Labour) replied: I have had this matter under anxious and prolonged examination, in consultation with the Unemployment Assistance Board, and our inquiries are not yet completed. As the right hon. gentleman is well aware, the subject is one of great difficulty and complexity, and in view of the importance of a right decision, not only to the unemployed but in the whole fabric of our social life, it is essential that before new arrangements are submitted to Parliament for approval they should first be examined thoroughly from every standpoint. In these circumstances, it will not be possible to take any action immediately, and I do not anticipate that any alteration can be made in the existing position of the standstill arrangements before next spring at the earliest.

Births, Marriages, and Deaths

BIRTHS

- ALEXANDER.—On Oct. 17th, at a Glasgow nursing-home, the wife of J. R. B. Alexander, M.B. Glasg., Stormont, Galston, of a son.
 FARMER.—On Oct. 18th, at a nursing-home in Westcliff, the wife of A. Pring Farmer, M.B. Lond., Sudan Medical Service, of a daughter.
 HOLMES.—On Oct. 15th, at Paston, Peterborough, the wife of E. Arthur Holmes, M.R.C.S. Eng., of a daughter.
 MACLEOD.—On Oct. 18th, at St. Margaret's, Inverness, the wife of Dr. Alastair MacLeod, London, of a daughter.
 PEREGRINE.—On Oct. 11th, Dr. R. L. Peregrine, of Kessingland, near Lowestoft, of a daughter.
 PROWSE.—On Sept. 19th, at Ootacamund, South India, the wife of Dr. A. S. Prowse, Assam Oil Co., Ltd., of a daughter.

MARRIAGES

- ALDERTON—BLACKMAN.—On Oct. 12th, at Bexhill, R. Maitland Alderton, F.R.C.S. Eng., of Hadleigh, Suffolk, to Kathleen Blackman, of Bexhill.
 JEFFARES—DERBYSHIRE.—On Oct. 19th, at All Souls' Church, Langham-place, London, W., James Langley Maynard Jeffares, F.R.C.S. Edin., of Kegworth, to Katherine Mary, daughter of Mr. J. N. Derbyshire, of Rempstone Hall, Notts.

DEATHS

- CAMPBELL.—On Oct. 8th, at Cambridge, Massachusetts, Jessie Deans Rankin Campbell, M.B. Glasg., B.Sc., wife of Charles Macfie Campbell, M.D. Edin., of Harvard University.
 FOSTER.—On Oct. 13th, at University College Hospital, following an operation, George Muir Foster, M.R.C.S. Eng., of Hampstead, aged 65.
 GIBSON.—On Oct. 18th, at the hospital of Saint Nicholas, Pyrford, Surrey, John Monro Gibson, F.R.C.S. Eng., of Emsworth, Hants, aged 30.
 MAY.—On Oct. 16th, suddenly, George Francis May, M.D., C.M. McGill, L.S.A., late Medical Superintendent of the Durham County Mental Hospital.
 PLOWRIGHT.—On Oct. 16th, at North Wootton, King's Lynn, Charles Tertius Maclean Plowright, M.B. Camb.
 ROWSE.—On Oct. 13th, Edward Leopold Rouse, M.D. Brux., Lieut.-Colonel, R.A.M.C., T., of Putney and Harley-street, aged 67.
 WILLS.—On Oct. 15th, at Princes Risborough, Bucks, Alfred Wills, M.D. Lond., B.Sc., Hon. Captain R.A.M.C., aged 46 years.
N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

ULVERSTON'S NEW HOSPITAL.—Plans for the new hospital at Ulverston, in Furness, are in preparation. It will provide 54 beds, including a maternity section and a children's ward. The estimated cost is £30,000, of which over £18,000 has already been received.

MEDICAL NEWS

University of Oxford

On Oct. 17th the degree of bachelor of medicine was conferred on R. E. Adam.

University of Cambridge

On Oct. 18th the following degrees were conferred:—

M.D.—B. F. Longbotham.
M.B., B.Chir.—E. M. Griffin.
M.B.—J. D. Hay, J. N. Groves, and C. G. Parsons.
B.Chir.—T. D. F. Money, *P. H. L. Playfair, R. I. N. Greaves, L. R. Gardner, E. P. H. Drake, J. H. Patterson, and W. F. Walton.

*By proxy.

Dr. G. H. F. Nuttall, F.R.S., emeritus professor of biology and director of the Molteno Institute, has been elected an honorary fellow of Christ's College.

University of Dublin

On Oct. 16th the degree of doctor of medicine was conferred on Simon Wigoder.

University of Glasgow

Mr. Edward Hindle, Sc.D., has been appointed regius professor of zoology in place of Prof. John Graham Kerr, who has resigned. Dr. Hindle has long been associated with medical work, notably in the investigation of yellow fever.

On Oct. 19th the following degrees were conferred:—

M.B., Ch.B.—Margaret D. Green, H. L. Campbell, and P. J. Cantor (with honours); R. M. Calder, James Cuthbert, I. D. Henderson, J. S. Hall, D. C. Miln, H. T. Richmond, Catherine Richardson, G. H. G. Hope, A. D. T. Govan, A. S. Rogen, Julius Levine, and J. B. Lynch (with commendation); John Aitken, May D. Anderson, Isaac Ashforth, A. Y. Barclay, R. J. W. Barlow, Harold Bernstein, J. C. Brash, D. R. Brown, P. M. H. Browning, I. W. Burke, J. F. Cadas, J. H. Chambers, J. H. C. Clarke, James Cochran, Julius Cohen, G. D. Cresswell, Maud G. Dempster, R. I. T. Dunnachie, D. J. Easton, J. C. Eaton, P. F. Fletcher, Audrey M. Forbes, Kenneth Fraser, Max Freedman, W. G. Garrow, G. McL. Gorrie, R. J. Gourlay, Ronald Gowns, William Gray, Henry Greer, A. W. St. C. Greig, J. F. K. Grieve, G. H. Hall, Mary D. Hardie, G. A. E. Harman, J. W. Henderson, John Hilferty, W. C. Howie, H. E. Hutchison, Charles Kelly, W. McK. S. Kelso, A. S. M. King, G. B. L. Laird, William Laurie, James Leckie, William Leslie, D. S. MacL. MacArthur, Patrick MacArthur, Elizabeth McC. McCann, W. M. McCutcheon, R. S. McGeorge, G. A. Macgregor, J. S. McGregor, William McKechnie, William MacKendrick, Norman Mackenzie, C. J. Mackinlay, Angus Macleod, J. D. McRae, William Magauran, J. B. Mair, S. L. Mann, R. D. Menzies, J. S. Meredith, H. H. Miller, Archibald Morrison, H. A. Mullen, E. H. Murchison, D. A. Naismith, Folarin Ogunro, D. B. Ramsay, William Richmond, Jacob Schloss, D. G. Smith, F. A. Smith, David Stephenson, J. E. Struthers, Janet W. Sutherland, George Swan, J. F. Swan, J. R. Taylor, Donald Thomson, J. E. Tillotson, James Watt, W. J. Weetch, J. H. Werk, T. C. B. Williamson, R. W. Wyse, R. P. Young, and W. C. Young.

The Brunton memorial prize and the West of Scotland R.A.M.C. memorial prize were awarded to Margaret D. Green.

Royal College of Surgeons of Edinburgh

At the annual meeting of the College held on Oct. 16th the following office-bearers were elected for the ensuing year: president, Mr. Henry Wade; vice-president, Dr. A. H. H. Sinclair; secretary and treasurer, Mr. J. W. Struthers; members of president's council, Mr. W. J. Stuart, Dr. J. S. Fraser, Mr. J. M. Graham, Prof. R. W. Johnstone, Prof. D. P. D. Wilkie, and Mr. J. J. M. Shaw; representative on the General Medical Council, Mr. Alex. Miles; convener of museum committee, Dr. A. Logan Turner; and librarian, Mr. D. M. Greig.

The following candidates who have passed the requisite examinations were admitted to the fellowship:—

U. P. Sinha, M.R.C.S. Eng.; E. W. B. Griffiths, M.B. N.Z.; G. N. Barker, M.B. Lond.; E. F. Barnardo, M.B. Lond. A. G. Bester, M.B. Cape Town; D. G. W. Brown, M.B. Liverpool; R. C. Burr, M.D. Ontario; H. P. Clark, M.D. Manitoba; P. F. S. Court, M.R.C.S. Eng.; H. D. Cronyn, M.R.C.S. Eng.; John Durran, M.B. Edin.; T. G. H. Hogg, M.B. Melb.; Christopher Hotson, M.B. Edin.; Daniel Hugo, M.B. Dub.; R. J. Kellar, M.B. Edin.; M. N. Khanna, M.B. Punjab; A. L. McFarlane, M.R.C.S. Eng.; W. A. Mackay, M.B. Glasg.; N. J. L. Margaretson, M.D. Ontario; A. G. G. McVillie, M.B. Edin.; Jack Penn, M.B. Witwatersrand; L. W. Plewes, M.D. Toronto; Allen M. S. Pollock, M.R.C.S. Eng.; Thomas Purce, M.B. Belf.; T. R. Quinn, M.B. Sydney; A. C. Rifer, M.B. Lond.; A. L. Sheld, M.B. N.Z.; George Stephen, M.B. Aberd.; and Dr. R. L. Stevenson, M.B. N.Z.

Royal Sanitary Institute

Dr. M. T. Morgan, medical officer of the Ministry of Health, will deliver the Benjamin Ward Richardson lecture at the institute (90, Buckingham Palace-road, London, S.W.), on Tuesday, Nov. 12th, at 5.30 p.m. His subject will be some details of the system of health inspection of meat and meat products destined for export, in the great abattoirs of South America. Sir Arthur Newsholme will preside.

West Riding Association of Graduates of the University of Edinburgh

This association is holding its annual general meeting at the Midland Hotel, Bradford, on Nov. 6th at 6.45 p.m. The annual dinner will take place at 7.30 p.m., and the guest of the evening will be Mr. Henry Wade. Further information may be obtained from the hon. sec., 4, Clifton Villas, Bradford, Yorks.

Post-graduate Teaching in Glasgow

The Glasgow Post-Graduate Medical Association has arranged for a series of lectures and clinical demonstrations for practitioners to be given on Wednesday afternoons from Nov. 6th to May 27th at 4.15 p.m. Special courses in ophthalmology, obstetrics, radium therapy, and diseases of the ear, nose, and throat will also be held during the session. The secretary may be addressed at 9, Woodside-terrace, Glasgow, C.3.

London Hospital Dinner

Prof. H. M. Turnbull presided over the annual dinner held at the Trocadero Restaurant on Oct. 17th, and the 309 diners included 64 of his former pathology assistants, concentrated at a central table. Before there were any speeches Prof. Turnbull took wine with them, and received a first instalment of the musical honours which were later accorded by the whole room. After speaking of the events of the hospital year, which has seen an entry of students unequalled since 1906, he drew a comparison between present conditions and those when he came to the London—when members of the staff, springing out of their broughams and victorias, were distinguishable from students, and (in the absence of morbid anatomists) buried their own dead. In a man of his temperament, he said, to whom everything at times seemed futile, it was always a great comfort to have young people around: the young gave far more than they ever received. His own work would have been given up without Robert Worthington, and no man in any walk of life had ever had a more faithful and altruistic assistant than W. W. Woods. There had also been women assistants in the department, and he was very proud of them. It was sometimes said that the presence of women would spoil a hospital dinner. But why? Any woman who had worked in a pathological laboratory was likely to know what passed for wit among men—Dr. Charles Miller, proposing the chairman's health, said it was half in jest that long ago L. A. Smith described Turnbull's department as the palace of truth, but this was exactly what it had become. He recalled that Turnbull, after his distinguished career at Oxford had won a cup on the Cresta run and studied in foreign schools before coming back to building up the foremost pathological institute in this country. Besides raising a school of morbid anatomists he had taken an interest in every student who came under him, so that his name was one which inspired pride, gratitude, and affection.

Various speakers then rose in response to popular demand. Dr. Woods confined himself to two words; Dr. Lewis Smith said that the old clinicians, almost bankrupt alike in money and ideas, had covered their deficiencies magnificently; Sir James Walton said there was no other hospital where clinicians received the same ungrudging help they got from Prof. Turnbull's department; Mr. Russell Howard, Mr. Hugh Lett, and Mr. James Sherren (returning to the dinner after ten years) made lively contributions to the entertainment; Mr. McNeill Love contrived to acknowledge his golf cup with an apt tribute to Prof. Turnbull's training; and Mr. Neligan, encouraged by Sir William Goschen, said a few well-chosen words on behalf of himself and Mr. Lindsay as organisers of the dinner. The survivors then went home.

Society for the Provision of Birth Control Clinics

A lecture on the theory and practice of contraception will be given to medical students and practitioners by Dr. Gladys Cox on Friday, Nov. 15th, at 6 P.M., at the Walworth Women's Welfare Centre, 153A, East-street, London, S.E. Practical demonstrations will be given at 6 P.M. and 7 P.M. on Nov. 22nd and 29th. Further information may be had from the secretary at the clinic.

Tribute to Dr. D. A. Coles

On his retirement from the chairmanship of the advisory medical committee of the Industrial Welfare Society and of the Council of Industrial Medicine, Dr. D. A. Coles, with Mrs. Coles, was entertained to dinner at the Goring Hotel, London, on Oct. 15th. Prof. E. L. Collis presided, and a letter was read from the Duke of York, president of the society, paying a warm tribute to the work accomplished by Dr. Coles. Letters expressing appreciation of all he had done in promoting international congresses of doctors were received from Dr. C. J. Mijlief (International Association for Life Saving and First Aid to the Injured), Dr. C. Yersin (Swiss Medical Society for Industrial Accidents and Diseases), and Dr. Langelez (International Congress for Accidents and Industrial Diseases). A cable from Dr. H. H. Kessler (Newark, U.S.A.) on behalf of the American members of the International Congress of Industrial Accidents and Diseases was also read. Short speeches were delivered by Dr. Margaret Dobbie-Bateman, Dr. Edward Burnet, Dr. Gilbert Burnet, Mr. Robert Hyde, and Dr. T. E. A. Stowell. In expressing his thanks, Dr. Coles congratulated Dr. Stowell on his appointment as chairman of the advisory medical committee, and the members on having secured one so eminently fitted for the post.

Fellowship of Medicine and Post-Graduate Medical Association

The following all-day courses are to be given: chest diseases, at the Victoria Park Hospital (Oct. 28th to Nov. 2nd); urology, at St. Peter's Hospital (Nov. 4th to 16th); and medicine, surgery, and gynaecology, at the Royal Waterloo Hospital (Nov. 11th to 23rd). Afternoon courses will be held as follows: venereal diseases, at the London Lock Hospital (Nov. 18th to Dec. 14th); infants' diseases, at the Infants Hospital (Nov. 25th to Dec. 7th). A week-end course in clinical surgery will be given at the Royal Albert Dock Hospital (Nov. 2nd and 3rd); and in gynaecology at the Samaritan Hospital (Nov. 15th and 16th). On Nov. 7th Dr. Norman Haire will lecture on practical contraception at 4 P.M. at the Medical Society of London. Dr. Gardiner-Hill's lecture on thyroid in the endocrinology series which was postponed will be given on Tuesday, Oct. 29th, at 8.30 P.M. at the National Temperance Hospital. A clinical and pathology course for M.R.C.P. candidates will be held on Tuesdays and Thursdays, from Nov. 26th to Dec. 12th, at 8 P.M. at the National Temperance Hospital. The courses and lectures are open only to members and associates of the fellowship. The secretary of the Fellowship may be addressed at 1, Wimpole-street, London, W.1.

Research at Maudsley Hospital

At its meeting on Oct. 22nd the London County Council accepted the offer of the Rockefeller Foundation to contribute £9000 to be expended on psychiatric research at the Maudsley Hospital, Denmark Hill, over a period of three years at the rate of £3000 annually. It has been agreed that the grant from the Foundation shall be used as salaries for five research workers to be nominated by the medical superintendent of the hospital and the director of the central pathological laboratory. For the present two of these posts are to be held by workers engaged on clinical investigations which will be carried out mainly in the hospital, and Dr. W. Mayer Gross, formerly professor at the University of Heidelberg, and Dr. Erich Guttmann, formerly privatdozent at the University of Breslau, have been appointed. The other three workers will be engaged in pathological research, mainly in the laboratory, and Dr. Alfred Meyer, formerly professor at the University of Bonn, Dr. Adolf Beck, formerly assistant at the Institute of Hygiene and Bacteriology of the University of Marburg, and Mr. Grey Walter, B.Sc., formerly research assistant at the pathological laboratories, Cambridge, have been appointed.

Vacancies

For further information refer to the advertisement columns

- Accrington, Victoria Hospital.—H.S. £150.
 Bagshot Rural District Council, &c.—M.O.H., &c. £1000.
 Belgrave Hospital for Children, Clapham-road, S.W.—H.S. At rate of £100.
 Birmingham City.—Asst. M.O. for Maternity and Child Welfare. £500.
 Birmingham United Hospital.—Res. Anaesthetists for General Practice, respectively.
 Birkbeck Hospital, Birkbeck, W.—H.S. At rate of £135.
 Bristol County Mental Hospital, Haywards Heath.—Asst. M.O. £350.
 Bristol Eye Hospital.—Jun. Res. H.S. £100.
 Bristol, Ham Green Hospital and Sanatorium.—Jun. Asst. Res. M.O. £250.
 Chesterfield Poor Law Institution and Infirmary.—Res. M.O. £150.
 Dreadnought Hospital, Greenwich.—Anaesthetist. 50 guineas.
 Dundee Royal Infirmary.—Hon. Asst. Visiting Surgeon.
 East Ham Memorial Hospital, Sharnbury-road, E.—Hon. Physician.
 Finsbury Dispensary, Breaver-street, E.C.—Res. and Asst. Res. M.O.'s. £250 and £200 respectively.
 Folkestone, Royal Victoria Hospital.—Jun. Res. M.O. At rate of £150.
 General Lying-in Hospital, York-road, Lambeth, S.E.—Jun. Res. M.O. and Anaesthetist. At rate of £100.
 Halifax General Hospital.—Jun. Res. M.O. £250.
 Hastings, Royal East Sussex Hospital.—Asst. Pathologist. £300.
 Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Asst. Physician. Also Hon. Asst. Surgeon.
 Host of St. Luke, 14, Fitzroy-square, W.—Res. M.O. At rate of £200.
 Hore General Hospital.—Hon. Physician. Also Hon. Asst. Anaesthetist.
 Huddersfield Royal Infirmary.—H.S. for Eye, Ear, and Obstet. Depts. At rate of £150.
 Leeds, Killingbeck Sanatorium.—Sen. Asst. Res. M.O. £350.
 Leicester Royal Infirmary.—Jun. Res. Anaesthetist. At rate of £150.
 L.C.C.—Temporary District M.O.'s for Special Areas. £100-£235.
 Liverpool, Smithdown-road Hospital.—Sen. Res. Asst. M.O. £350.
 London Homoeopathic Hospital, Great Ormond-street, W.C.—Gynaecological H.S. At rate of £100.
 London Hospital, E.—Surgical 1st Asst. and Reg. £300.
 Manchester City.—Asst. Tuberc. O. £650.
 Maudsley Hospital, Denmark Hill, S.E.—2nd Asst. M.O. At rate of £625.
 Metropolitan Ear, Nose, and Throat Hospital, 2, Fitzroy-square, W.—Asst. Surgeon and Sen. Clin. Asst.
 Newcastle-upon-Tyne, City Hospital for Infectious Diseases.—Res. Med. Asst. £250.
 Newport, Mon., Royal Gwent Hospital.—H.S. At rate of £135.
 Oldham Royal Infirmary.—Cas. O. and H.P. At rate of £175.
 Prince of Wales's General Hospital, N.—Hon. Physician to Dept. of Physical Medicine.
 Princess Louise Kensington Hospital for Children, St. Quinton-avenue, W.—Hon. Asst. Physician.
 Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Res. M.O. for Isolation Hospital. At rate of £200. Res. Anaesthetist. At rate of £100. Res. Anaesthetist and Dist. Res. M.O. At rate of £90. Also Asst. Res. M.O. At rate of £80.
 Queen's Hospital for Children, Hackney, E.—Dermatologist.
 Rotherham Hospital.—H.P. £180.
 Royal Chest Hospital, City-road, E.C.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.
 Royal College of Physicians, Pall Mall East, S.W.—Leverhulme Research Scholarship. £500.
 Royal Free Hospital, Gray's Inn-road, W.C.—Anaesthetic Registrar. £100. Also Dermatologist.
 St. Helens Hospital, Lanes.—Jun. H.S. £150.
 St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Part-time Radiologist. At rate of £125.
 St. Thomas's Hospital, S.E.—Ophthalmic Surgeon.
 Sheffield Jessop Hospital for Women.—Asst. Hon. Surgeon.
 Sheffield, Winter-street Hospital.—Asst. Tuberc. O. £350.
 Southend Municipal Hospital.—Asst. M.O. for Rochford Municipal Hospital. £350.
 Southend-on-Sea General Hospital.—Hon. Physician for Charge of Physical Medicine Dept.
 South London Hospital for Women, Clapham Common, S.W.—Clin. Assts. for Gynaecological Out-patients.
 Wakefield, Scarboro Park Mental Hospital.—Asst. M.O. £650.
 West Bromwich County Borough.—M.O.H. and School M.O. £1000.
 West London Hospital, Hammersmith-road, W.—Res. Cas. O. At rate of £100.
 Wimbledon Hospital, Thurstan-road, S.W.—Res. M.O. At rate of £150.
 Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—Two H.S.'s. Each at rate of £100.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Marlow (Bucks) and Medbourne (Leicester).

NOTES, COMMENTS, AND ABSTRACTS

CHANGING SURGERY *

By GEORGE E. GASK, C.M.G., D.S.O., F.R.C.S. Eng.
EMERITUS PROFESSOR OF SURGERY IN LONDON UNIVERSITY

You may think that this title presages a comparison between the results of aseptic surgery and those before Lister. My object however is to look at the present rather than the past, and the changes of which I shall speak are those of the last 30 years. Looking back over this period one realises that there are many events of great importance which might be recorded—e.g., the consolidation of the gains of sepsis over anti-sepsis, resulting in the evolution of a nearly perfect technique; or the revolution following the application of X rays to diagnosis. Great, however, as these innovations may be, it will be agreed, I think, on reflexion that the greatest and the most far-reaching in its effects is the growth of specialism, by which is meant the segregation of patients suffering from like diseases and their treatment by doctors who devote themselves to one special line of study. Specialism is a compelling force which brings many changes in its train. Not only has it altered the type and scope of surgery, but it has greatly affected, and is still affecting, the development and administration of our hospitals and medical services.

BIRTH OF SPECIALISM

No single date can be given to mark the birth of specialism. For centuries past there have been men, often with hereditary training, who gained their living by cutting for stone or couching for cataract. St. Barts' had specialists of a sort in the sixteenth century and even female practitioners, for in 1554 Elizabeth Hall was paid three shillings for curing the scald head of a certain John Turner. Until the middle of the nineteenth century the physicians and surgeons undertook to teach and practise every branch of their art saving midwifery. About that time the need for specialism seems to have arisen, or at all events the cry for some special teaching, for in 1867 Dr. James Andrew and Dr. Reginald Southey were appointed demonstrators in dermatology, although there was still no special clinic. Three years later the governors set up special departments for diseases of the eye, of the ear, and of the skin. Special times were fixed for seeing the patients but the medical officer in charge remained a general physician or surgeon. Thus in 1870 Dr. Samuel Gee, then an assistant physician, was put in charge of the dermatological department. What he thought of specialism then is summed up in his remark "There is a name that I hate, nay there are two names that my soul abhorreth, the name of a specialist and the name of a consultant." In a few years came the inevitable demand that the officers in charge should be specialists and provided with beds and all the accessory facilities for carrying on their special work. These demands were met, often, it must be admitted, in a grudging manner and we have the special departments much as we know them to-day.

In the early years of the present century the tide of specialism swept on resistlessly, and it looked as if soon there would be no place for the general surgeon. Surgery threatened to divide into numerous branches, so that now we have proctologists and urologists, surgeons for the brain, the eye, the nose,

the ear, as well as radiologists, cardiologists, gastrologists, and many others. This change is not confined to any one country; it has spread over the whole world, although it has reached its height in America where there is hardly an organ or a special function of the body to which a specialist is not attached.

My own feeling is that specialism is the direct and natural outcome of the growth of the natural sciences and their application to medicine. The latter half of the nineteenth century witnessed a tremendous outburst of scientific work; new discoveries came one after another—electricity, X rays, wireless, radium—in quick succession. Modern medicine makes use of almost every branch of natural science. Physics, chemistry, biology, mechanics, electricity, radiology, optics, and many others bring to medicine instruments of precision for diagnosis, for detailed examination, or for treatment. Take one example. Consider the effect of the discovery of the reflecting mirror. It has illumined the darkest recesses of the body; it has given us the ophthalmoscope, the laryngoscope, and the cystoscope; it has thrown a revealing light on many hidden mysteries. Thus medicine has become so big a subject, the number of facts to be remembered so great, that man's mind cannot grasp them all at once, with their meaning and application. He has been forced to devote his attention to a more limited field. This is the main reason for the rise in specialism.

As a result of this increased knowledge the practice and outlook of the surgeon has changed. It is no longer possible for the frock-coated surgeon to walk round his wards and make a correct diagnosis with a shrewd glance of his trained eye. I remember a distinguished surgeon of the last century when shown a section under the microscope saying "I do not know anything about this microscope, but I do know that that man has a sarcoma because I have seen one before." The modern surgeon in his white coat has to know a great deal more than his Victorian ancestor. He must have a thorough mastery of surgical technique, but he needs also a sound working knowledge of physics, chemistry, and other sciences. Take a case of urinary disease. A complete examination involves, in addition to a routine overhaul of the patient, an inspection of the interior of the bladder with a cystoscope, a pyelogram of the ureters and renal pelvis, a bacteriological examination of the urine, and an estimate of the excretory efficiency of the kidneys by a chemical analysis. The whole examination is a lengthy and complicated process involving an accurate knowledge of a number of scientific methods. It is easy to understand how it has become necessary for men to limit the scope of their work and to devote themselves to special subjects.

But though it has been found desirable that for a certain time special subjects should be taught and studied by special men, it is not necessary to believe that specialised work must always continue to be segregated from general surgery in the manner and to the extent in which it is done to-day. Some of the specialties as they become better known and their methods standardised will come back to general surgery. We see this occurring at the present time. Our young men are learning to use the cystoscope as they learn to drive a motor-car. When they become senior, they will need no cystoscopist.

Medical teaching has not given all the help to medical students that it might have done. There

* Abstract of presidential address to the Medical Society of London on Oct. 21st, 1935.

seems hope that this lack may shortly be remedied and that the syllabus of basic sciences will be so framed as to include many of the subjects which are of special interest to medical men, the curriculum becoming more harmonious and better designed to meet the growing demands of modern medicine. If the plan is successful the doctor of to-morrow will be better equipped to deal with the multitudinous applications of science. There will then be less need for the cleavage of surgery into special subjects.

DEVELOPMENT OF THE TEAM

One result of this rapid increase in scientific knowledge, and the difficulty of one man doing everything very well, is the development of the team spirit. This is of recent growth and is largely a phenomenon of the Great War and of post-war surgery. It was seen at its height in casualty clearing stations during the years 1917-18 where machinery was gradually evolved for the rapid and efficient treatment of enormous numbers of wounded. Here in the reception-rooms the patients were examined, diagnosed, and distributed to various sections where other teams took care of them for treatment and disposal. Various types of injuries—head, chest, fractured femurs—were segregated in special hospitals. War surgery became team-work because it was economical in time and more efficient.

But long before the war the Mayo Clinic was drawing visitors to Rochester, Minn., from the world over. The secret of the success of William and Charles Mayo was the development of the team spirit on a gigantic scale. In 1929 the team consisted of some 195 physicians with an army of assistants and technicians. The clinic is often belittled by those who have never visited it. It has been described as mechanisation of medicine or surgery run on the factory belt. It is true that in this clinic a patient has to go through a number of departments; but it is also true that many of the routine examinations, such as blood and urine analysis, which are necessary parts of every investigation, can be done more economically by non-medical technicians than by qualified doctors. The use of technicians has been developed to the nth degree at the Mayo Clinic; we are beginning to do it here—but very very slowly. Another advantage is the avoidance of dissipated energy. The doctors do not waste their time running from one end of the city to the other. A millionaire in one of the Southern States once wrote to Mayo asking him to visit him, to which Mayo replied that if the millionaire wished to see him he must come to Rochester. The millionaire telegraphed "Come at once, money no object." To this the answer flashed back "Money no object, not coming." The type of work in the Mayo Clinic is not essentially different from that done in all serious European hospitals, only in these it is done in a minor way and less efficiently. The Mayos are the owners and dictators of their hospital, they can do as they like with the money they earn; our hospitals are governed by cumbrous machinery, the legacy of monastic or conventual ancestry.

THE UNIT SYSTEM

Another change since the war is the formation of medical and surgical units. These are essentially teams of workers under the direction of a whole-time physician or surgeon who is relieved of the cares of private practice. The underlying idea is sound and in harmony with the spirit of the age. It combines the team spirit with improved organisation without interfering with the practice of bringing the medical

student into intimate contact with the patients. It is an attempt to graft on our well-tried and peculiarly English system a means whereby clinical education may be placed on a more scientific basis. In my opinion the greatest hindrance to our surgical work in this country is lack of organisation and want of sufficient assistants, both medical and technical. The units have done something to remedy this lack, but they themselves have suffered from it. See what is happening to-day in our London hospitals. A few years ago a surgical firm generally consisted of a surgeon, an assistant surgeon, and one or two house surgeons. Most of the surgical services have now added an extra man, commonly called a chief assistant. Not so long back hospital governors considered it the duty of the surgeons to do all the operations. Now it is being realised that the routine operative work can be done as well by the young men, leaving more time for the seniors to do progressive work. Moreover, the performance of routine operative work is valuable training in technique for the younger men, an opportunity which was largely absent when men of my generation held junior posts. Another advantage of this increase in operative personnel is the avoidance of long lists and long operating days which tired out all concerned and led to the rough technique which at one time (according to foreigners) characterised London surgery. This is a beginning but it is not enough. With more assistance, both medical and technical, more organisation would be possible, with better work and quicker returns. The only obstacle is financial. Good surgery, like most other good things, costs money.

EFFECTS OF THESE CHANGES ON THE CHARACTER OF SURGERY

How are these changes affecting the nature of the surgery which is being done. If one compares the operation lists of the present day with those of 30 years ago, one sees that surgery has become more preservative and less excisional. The tendency to say "this structure is diseased let us cut it out" is giving place to an attempt to preserve it. How Seldom now does the surgeon spend hours dissecting out tuberculous lymphatic glands of the neck; rational treatment combined with the removal of focal sepsis has rendered this unnecessary. To take another instance, think how gastrectomy for gastric ulcer, an operation so much in vogue ten years ago, is giving way to conservative means. A few years ago, while visiting a foreign clinic, we were shown—with some pride—a cupboard in which were suspended about a hundred stomachs. It reminded me of a gamekeeper's larder. I suppose in each case some forty or fifty square inches of stomach had been removed in order to cure an ulcer about half an inch in width. A triumph of technique and a tribute to the operative skill of the surgeon but not to his common sense. I hasten to add that gastrectomy is at times beneficial, but it is the failure of remedial treatment which makes it necessary.

In urinary surgery the use of the cystoscope, of biochemical tests to ascertain renal efficiency, and the application of radiography have revolutionised our surgery and have helped to preserve many kidneys which formerly would have been excised. The enlarged prostate still remains a riddle awaiting solution. The mortality from prostatectomy has certainly been reduced but it is still too high. The work of Prof. Kennaway and his team suggests that an endocrine secretion may in time furnish a means of avoiding operation. It seems almost a paradox

that the chief aim of the surgeon should be to find ways of avoiding surgery; but that is as it should be, for the best surgeon is an operating physician.

In neuro-surgery there is a growing tendency for the surgeon undertaking operations on the brain and spinal cord to make his own examination of the patient and to make his own diagnosis. He is no longer content to act the plumber for the physician, and this is a healthy tendency. Similar changes are to be seen in the surgery of the chest. The thoracic surgeon is expert in the use of the stethoscope, the bronchoscope, and all the resources of radiology. He makes his own diagnosis and as a result a technique has been evolved by which a diseased lobe of the lung can be excised with safety. This may, one hopes, be a step towards the better understanding of the cause and prevention of disease that will lead to preservation rather than extirpation. In both these branches we see a type of specialism of which the exponents are at the same time physicians and surgeons. They are not so much thoracic surgeons or neuro-surgeons as specialists in diseases of the chest or in diseases of the nervous system. This is all to the good; for the separation of surgery from medicine, a legacy of the Middle Ages, has been the most dreadful obstacle in progress and we have not recovered from it yet. Is it too much to hope that before long the director of a unit will have the supervision and direction of both the medical and surgical sides?

A further change which has come to surgery is the use of radiation both for diagnosis and treatment. The radiographic department has become an essential part—and incidentally a very expensive part—of every hospital in every town. Radiation for curative purposes has not yet found its level. The use of radium in the treatment of cancer has not proved a universal panacea, but radium has supplanted excision for superficial growths of the skin, and it is the method of choice for the treatment of epithelioma of the tongue and mouth. The old and terribly mutilating operations about the mouth and jaw are now rarely necessary. Research in teletherapy with massive doses of radium and high-powered X ray installations is being carried on and we wait, with some impatience, for further information.

Knowledge of the anatomy and physiology of the sympathetic nervous system is leading to the performance of new operations, such as that for Raynaud's disease. Arteriography throws light on the permeability of diseased arteries. But enough has now been said to support my contention that the application of the fundamental sciences to medicine has led to profound changes in the type of surgery which is being done.

EXPERIMENTAL SURGERY

There is a very recent growth, the importance of which it is difficult to exaggerate. A purist might say that institutions for experimental surgery are merely specialised physiological laboratories and in a sense he would be correct, for advance in surgery now is largely along physiological lines. But these experimental stations are directed immediately towards solving some of the many problems which confront the surgeon daily in his work. The laboratories of the surgical unit at Edinburgh under the guidance of Prof. D. P. D. Wilkie have already produced some stimulating work. And now, owing to the far-sighted generosity of Sir Buckston Browne, the Royal College of Surgeons of England has come into possession of a research farm at Downe where

Sir Arthur Keith is master and Dr. John Beattie director of research. Here indeed is an indication of the spirit of the times. The conservator of the museum now combines with that office the duties of director of research; maintenance of the museum, valuable and essential as it is, no longer marks the limits of the College's activities. Young surgeons are to have the chance of doing surgical research at a time when their minds are plastic and fertile. The *British Journal of Surgery* has decided to devote a section to the publication of this research work.

SOCIO-POLITICAL CHANGES

Walter Fletcher once remarked that the two greatest benefactors to British medicine were King Henry VIII. and Mr. Lloyd George: the one for abolishing the mediæval monasteries and laying the foundations of modern hospitals, the other for giving England the insurance system. Many of us can remember the storm of indignation which followed the introduction of the panel system and the bitter vituperation which was hurled at the head of the prime mover. Now the panel is a part of English life, and in the view of most it has proved of substantial benefit to British medicine. To my mind its great advantage lies in the fact that it has so raised the standard of living among doctors that men with a higher standard of education and consequently capable of better work are coming into the profession. For evidence of this see an article on Present-day Openings of Medical Practice in *THE LANCET* of August 31st. The great lack of the panel system was that no institutional treatment was provided; examination and medicine but no hospitals.

This lack is now to be remedied by the results of the Local Government Act, 1929. How quietly this Act came into being compared with the storm which ushered in the panel system; and yet its influence on the health and well-being of the people will be far greater, and incidentally it will influence the quantity and character of the surgery that is done. This Act has transferred the responsibility of the care of the sick poor from the poor-law to the municipal authorities. Thirty years ago one would find a 1000-bedded workhouse infirmary in London under the care of some six medical officers. The amount of surgery done was necessarily small; it was of the nature of emergency work, such as colostomy for the relief of intestinal obstruction or of amputation for gangrenous limbs. Now the infirmaries have become municipal hospitals; they have the most up-to-date theatres, first-rate surgical equipment, and a whole-time medical service which is already creating a fine tradition. What a chance this is for surgery to develop; here is a career for young surgeons.

Some people fear that the voluntary hospitals will be overwhelmed and displaced, being unable to compete financially with hospitals maintained by the rates. Personally I am not afraid. If a voluntary hospital falls behind in the race it is its own fault and deserves to suffer. The State is tending more and more to assume the duty of looking after the health of the community. This is to be seen in the public health services and in the formation of clinics for tuberculosis, venereal diseases, child welfare, and others. Now the Local Government Act makes another big step forward by providing institutional treatment. The rich can look after themselves. The poor are also now in a fair way to be looked after. But there is an enormous middle class, who do not come under the Insurance Act and who badly need medical assistance and hospitals to which they can

go when requiring operations. What arrangements can be made for them and how are they to be financed? The answer may be compulsory universal insurance.

FOLLOW-UP SERVICE

Among the governing bodies of hospitals there is a growing consciousness that their duty is not at an end when the patient has had an operation and has left the hospital. There is a further obligation: to the patients in order to ensure uninterrupted convalescence; to the medical officers in order that they may have correct records of the value of the work done. The profession needs records of a national character, not merely the figures of a few gifted and energetic individuals.

The work of the Radium Commission offers an example of what may be done by concerted effort. When this commission founded its national centres an obligation was laid on each to establish a follow-up service and to prepare life statistics of their work. The fruits of this are now appearing as national statistics of the results of radium treatment of certain forms of cancer. It is to be hoped a similar service will rapidly replace the old form of hospital statistics, which amount to little more than a list of various diseases treated.

SURGICAL ASSOCIATIONS

A new departure in post-war surgery has been the formation of surgical associations. In 1920 was founded the Association of Surgeons of Great Britain and Ireland. Surgeons from all over the country meet at stated intervals to exchange views on current surgical topics and, what is perhaps still more important, at these meetings they learn to know each other and to make lasting friendships. Its very success however entails certain moral obligations and it seems to me that a heavy responsibility lies on it and on all British colleges of surgery to help the surgeons of the whole country. It is probably fair to say that the bulk of surgery is done by men who have not taken a special degree in surgery; it would be of great advantage to them and to the country if they could in some way be brought into contact with the progress of work.

Mention should also be made of the development of a number of surgical travelling clubs. These are small groups of surgeons which make a practice of travelling each year to visit some foreign clinic. The advantage of this is manifest for it brings British surgery in touch with all the best work of other countries and many new ideas are brought back to be put into practice at home. Surgery is becoming international, a fact that cannot help being conducive to good feeling among the nations. The Société Nationale de Chirurgie de Paris has asked the Royal College of Surgeons of England to enter into closer relations with it and the response has been cordial.

THE FUTURE

What will be the outcome of these changes going on in the world of surgery? He must be a wise man who can foretell the future; he is a dull one who cannot see what is going on under his own nose. The State or the municipal authorities are assuming more and more the duty of looking after the health of the people. There is a swing against the rather strict limits in which specialism has been confined. Our young men are striving to widen their sphere of action and to gain a mastery of their profession by rendering themselves expert at an early age in the varied and complicated techniques needed for

diagnosis and treatment. There is increasing demand for better organisation of surgery and the development of the team spirit. The disadvantage under which detached workers labour is obvious. We need to make plans on a national scale so that, instead of relying on the chance and rare talents of some super surgeon, we may have succession of effort carried on by generation after generation of surgeons. Let us remember the story of the race of the torch. They were not always the fastest runners who kept their torch alight. The Sphinx—which is Science—was slain at last by a man lame on his feet and was brought home laid on the back of an ass.

JUDICIAL HANGING

THE Medico-Legal Society of Victoria is a young society, founded only in 1931, of which the first volume of *Proceedings* has recently been published.¹ The first paper given before the society, under the presidency of Mr. Justice McArthur, was by Prof. F. Wood Jones, F.R.S., and dealt with the anatomical lesions in judicial executions—a subject, it may be remembered, which he discussed in this journal more than twenty years ago.² Prof. Wood Jones ranges himself with many prison officials and others in holding that a submental knot with a short drop should be adopted by those whose duty it is to carry out the sentence of the law on their fellow-men. There is certainly evidence to prove that complete fracture of the axis follows this procedure, and that it does not certainly follow the use of subaural or suboccipital knots, though Dr. C. Godfrey, in the discussion on the paper, brought forward proof of fracture of the axis in several cases where the knot had been tied under the left ear. The claim for the superiority of the submental procedure would appear to be in keeping with anatomical considerations. Disruption of the base of the skull, which is common when other methods are employed, is not, as Prof. Wood Jones says, an ideal method of procuring death, and the different ways in which this legal necessity may be attained seem to be used in haphazard fashion, and with varying results

Mr. GEORGE BANKOFF writes to disclaim any knowledge or responsibility on his part for the article published on the front page of the *Sunday Referee* of Oct. 20th. Neither information nor photograph was supplied by him or anyone in his employ. The writer of the article was unknown to him.

Dr. ALFRED WILLS, whose death occurred on Oct. 15th at Princes Risborough, where he was partner in a general practice, qualified from Guy's Hospital in 1914. Three years earlier he had taken his B.Sc. Lond. with honours, and in 1921 he went on to take the M.D. degree. He filled house appointments at Guy's and the Croydon General Hospital and served in the R.A.M.C. with the rank of captain. Dr. F. G. Parsons writes: "Wills was one who, had fortune been kinder, would have made an ideal consulting physician, for he was clever, observant, level headed, and kind hearted. I am indebted to him for help and advice in writing the History of St. Thomas's Hospital, with which that of Guy's is so closely blended. If we have succeeded in giving a fair account of the Guy's point of view in describing the frequent and unavoidable differences between the two great hospitals placed for so many years, side by side, in Southwark, it is to Wills's logical brain that most of the credit is due. I am glad to think that his last days were cheered by the knowledge that his son had begun to follow in his footsteps at the famous medical school of which he was so proud."

¹ *Proceedings of the Medico-Legal Society of Victoria, 1931-33.* Melbourne: Brown, Prior and Co. (Pty.), Ltd. Pp. 162.

² *THE LANCET*, 1913, i., 53.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, Oct. 28th.

Odontology. 8 P.M. Mr. Cyril Howkins: Mortality and Occupational Diseases of a Dental Surgeon (presidential address). Mr. W. Warwick James: An Improved Procedure for the Removal of Third Mandibular Molars.

FRIDAY, Nov. 1st.

Otology. 10.30 A.M. (Cases at 9.30 A.M.) Mr. Harold Kisch: Review of Petrositis (presidential address). Mr. F. W. Watkyn-Thomas: Treatment of Petrositis. Sir James Dundas-Grant: Measurement of Decibel Hearing Loss by Tuning Forks.

Laryngology. 5 P.M. (Cases at 4 P.M.) Mr. Lionel Colledge: presidential address.

Anæsthetics. 8.30 P.M. Dr. H. A. Richards: presidential address.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.

MONDAY, Oct. 28th.—8.30 P.M., Dr. Macdonald Critchley and Dr. John Aydon: Electrical Injuries.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

WEDNESDAY, Oct. 30th.—4 P.M. (St. James Hospital, Ouseley-road, S.W.), Dr. J. B. Mennell: Manipulative Surgery of the Spine.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Nov. 1st.—8 P.M. (West London Hospital), Dr. C. E. Newman, Dr. H. E. Archer, Dr. H. W. Post, and Mr. Neil Sinclair: Diseases of the Gall-bladder.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY, Oct. 28th.—5 P.M., Dr. L. W. Proger: Some Diseases of Bone (I.).

FRIDAY, Nov. 1st.—5 P.M., Dr. A. J. E. Cave: The Anatomy and Physiology of the Human Larynx.

UNIVERSITY OF LONDON.

THURSDAY, Oct. 31st.—5 P.M. (1, Wimpole-street, W.), Sir St. Clair Thomson: Defences of the Air-passages. (Seminar lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 28th, to SATURDAY, Nov. 2nd.—INFANTS HOSPITAL, Vincent-square, S.W. Mon., Wed., and Fri., 8 P.M., F.R.C.S. (Primary), anatomy and physiology course.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. All-day course in gynecology.—VICTORIA PARK HOSPITAL, B. All-day course in chest diseases.—ROYAL ALBERT DOCK HOSPITAL, E. Sat. and Sun., course in clinical surgery.—MEDICAL SOCIETY OF LONDON, Chandos-street, W. Thurs., 4 P.M., Dr. P. N. F. Bishop: Hormone Therapy in Gynecology.—NATIONAL TEMPERANCE League, 1, Old, N.W. Tues., 8.30 P.M., Dr. are open only to members.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Oct. 28th.—10 A.M., Medical Wards, Skin Clinic. 11 A.M., Surgical Wards. 2 P.M., Gynecological and Surgical Wards, Eye and Gynecological Clinics. 4.15 P.M., Mr. Green-Armistage: Regrets.

TUESDAY.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Throat Clinic.

WEDNESDAY.—10.30 A.M., Children's Wards and Clinic. Medical Wards. 2 P.M., Eye Clinic, Gynecological Operations. 4.15 P.M., Dr. Archer: Biochemical Demonstration.

THURSDAY.—10 A.M., Neurological and Gynecological Clinics. 12 noon, Fracture Clinic. 2 P.M., Eye and Genito-urinary Clinics.

FRIDAY, Nov. 1st.—10 A.M., Skin Clinic. 12 noon, Lecture on Treatment. 2 P.M., Throat Clinic. 4.15 P.M., Mr. Vlasto: Hoarseness.

SATURDAY, 10 A.M.—Medical Wards, Children's and Surgical Clinics.

The lectures at 4.15 P.M. are open to all medical practitioners without fee. Operations and medical and surgical clinics daily at 2 P.M.

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.

THURSDAY, Oct. 31st.—9 P.M., Dr. William Brand: The Public Health Aspect of Tuberculosis.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Oct. 28th.—3.30 P.M., Dr. Kinnier Wilson: Organic Dementia (II.).

TUESDAY.—3.30 P.M., Dr. Purdon Martin: Some Disorders of the Ductless Glands.

WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. Riddoch: The Sensory System (IV.).

FRIDAY, Nov. 1st.—3.30 P.M., Dr. Bernard Hart: The Psychoneuroses (IV.).

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.

WEDNESDAY, Oct. 30th.—4 P.M., Mr. D. H. Patey: The Uses of Traction in the Treatment of Fractures and Dislocations.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 30th.—4.30 P.M., Mr. Claude Mills: Some Interesting Urological Cases.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Oct. 31st.—2 P.M., Dr. R. S. Frew: Pyrexia. 3 P.M., Dr. A. Signy: The Examination of Cerebro-spinal Fluids.

Out-patient clinics daily at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.

TUESDAY, Oct. 29th.—5 P.M., Dr. W. Griffith: Eczema.

THURSDAY.—5 P.M., Dr. A. M. H. Gray: The Sarcoids and Lupus Pernio.

ST. JOHN CLINIC, Ranelagh-road, S.W.

FRIDAY, Nov. 1st.—4.30 P.M., Sir Leonard Hill, F.R.S.: Action of Ultra-violet, Visible, and Infra-red Rays.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Oct. 30th.—3.30 P.M., Dr. L. S. T. Russell: Tuberculosis in Youth.

CHADWICK PUBLIC LECTURE.

FRIDAY, Nov. 1st.—5.30 P.M. (26, Portland-place, W.), Dr. G. Killick Millard: The Vaccination Question To-day.

UNIVERSITY OF SHEFFIELD.

FRIDAY, Nov. 1st.—3 P.M. (Royal Hospital), Prof. A. E. Nash: Medical Cases.—3 P.M. (Royal Infirmary), Dr. A. E. Barnes: Medical Cases. 3 P.M. (Jessop Hospital), Prof. Cases.

SUNDAY.—10.30 A.M. Nash: Medical Cases.

Barnes: Medical Cases. Prof. Ernest Finch: Surgical Cases. 10.30 A.M. (Jessop Hospital), Mr. Eric Stacey: Gynecological Cases.

GENERAL INFIRMARY, Leeds.

TUESDAY, Oct. 29th.—3.30 P.M., Mr. Broomhead: Injuries in the Region of the Elbow.

PUBLIC DISPENSARY, Leeds.

WEDNESDAY, Oct. 30th.—4 P.M., Dr. S. J. Hartfall: Nervous Dyspepsia and Gastro-intestinal Neuroses.

ROYAL INFIRMARY, Manchester.

TUESDAY, Oct. 29th.—4.15 P.M., Dr. Fergus R. Ferguson: Recent Advances in Neurology.

FRIDAY, Nov. 1st.—4.15 P.M., Mr. Geoffrey Jefferson: Demonstration of Neuro-surgical Cases.

Appointments

BELL, A. C., M.B. Lond., F.R.C.S. Eng., has been appointed gynecologist to the Eastern Dispensary, Whitechapel.

CORDIMER, R., M.B. Glasg., D.P.H., medical officer for the Borough of Coatbridge.

DUNNE, B. J., M.B. N.Z., medical superintendent at the Drenth Hospital, Greenwith.

GERRIE, JOHN, M.B. Aberd., F.R.C.S. Edin., junior assistant surgeon to the department for the Treatment of Diseases of the Ear, Nose, and Throat, Royal Infirmary, Aberdeen; and hon. assistant surgeon for diseases of the Ear, Nose, and Throat to the Royal Aberdeen Hospital for Sick Children.

GILMOUR, HELEN, M.B. Glasg., pathologist at the Royal Alexandra Infirmary, Paisley.

GORDON-NAPHER, G., M.D. Edin., D.O.M.S., hon. assistant surgeon to the Nottingham and Midland Eye Infirmary.

GREEN, H. N., M.D. Sheff., hon. pathologist to the Jessop Hospital, Sheffield.

KNOWITON, R. W., M.D. Camb., M.C.O.G., antenatal medical officer, gynecologist, and consulting obstetrician for Southampton.

LEVY, S. M.B., ... at the Tilbury Hospital.

PAYNE, G. E., ... ty medical officer of health to

STACEY, J. E., ... hon. surgeon to the Jessop Hospital, Sheffield.

YULE, JOHN, M.D. Glasg., D.P.H., medical officer for Stockport.

Hospital for Sick Children, Great Ormond-street, London, W.C.—The following appointments

WATKINSON, D. J., M.B., R.

GORDON, I., M.B. Aberd., ... and

BRADSHAW, D. B., M.B. Dub., D.P.H., Assistant Medical Officer to the Immunological Department.

Certifying Surgeons under the Factory and Workshop Acts:

Dr. L. R. G. DE GLANVILLE (Rathfriland District, Denbigh).

Dr. W. Bruce (Dingwall District, Ross).

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL.—The annual prize giving will take place in the board room of the hospital on Wednesday, Nov. 13th, at 3 P.M., when Lord Macmillan will deliver the inaugural address. The annual school dinner will be held at Claridge's Hotel on the same day at 7.30 for 8 P.M.

ADDRESSES AND ORIGINAL ARTICLES

MEDICAL EDUCATION

AN ADDRESS GIVEN AT ADELAIDE UNIVERSITY ON
THE OCCASION OF THE JUBILEE OF THE
MEDICAL FACULTY

By LORD HORDER, K.C.V.O., M.D., F.R.C.P. Lond.,
SENIOR PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

MR. VICE-CHANCELLOR, YOUR EXCELLENCY, LADIES, AND GENTLEMEN,—On behalf of my friend and colleague, Sir Thomas Dunhill, and myself, I desire to thank you, Mr. Vice-Chancellor, and the Council of the University of Adelaide, for the signal honour which you have this day conferred upon us.

That attractive diffidence which is so characteristic of Sir Thomas Dunhill would lead him to demur if for a moment I segregate him from myself and say, quite boldly, that in his case I realise how fitting this honour is. A son of Australia, he has for the past 15 years not only given the homeland the fruits of his genius, but he has shown us all of what stuff his motherland is capable. In the unlikely event of anyone in Australia being in a state of doubt on the point, I would like to say here that my colleague has taken his place in the very first rank of British surgeons and has, as we all know, received the recognition due to him from the highest in the land.

In my own case the position is very different. I am a stranger amongst you. You in Australia have already showered your well-known hospitality upon me, as upon the rest of us who have visited you during the past two weeks, with embarrassing profusion. Such a cordial welcome as you have given us, and such kindness as you have shown, have more than rewarded us for our adventure and for any contributions we have made to the deliberations of the B.M.A. meeting in the Commonwealth. And now you put me still further in your debt by making me an honorary member of your University and inviting me to speak to you. I can only say "thank you" very sincerely and assure you that I shall always value this honour as long as life lasts.

In your generously extravagant references to myself, Mr. Vice-Chancellor, you have mentioned my interest in medical education. "I speak as a fool," but I dare not tell you for how many years I have participated in the making of doctors—first by teaching physiology in what we term the pre-clinical part of the curriculum, then in demonstrating bacteriology, pathology, and morbid anatomy, and for the past 25 years teaching clinical medicine. When I remember that at St. Bartholomew's Hospital Medical College over a hundred men qualify for practice every year, and that nearly 1000 students are scattered over the six years of their training at any moment, the recollection rather appals me. That I have had a hand in teaching about 3000 doctors at some time or other in their course of training brings a feeling of great responsibility and some humility. I may perhaps be forgiven for referring to this matter, since I am anxious that you should know that I do not speak without some experience.

THE CURRICULUM

The logic of the matter would naturally suggest that I refer, in the first place, to the curriculum itself.

And on that I hold strong and definite views. But I do not think this is the place in which to air them. I am more concerned to-day with your own conditions and the things I have seen here. Moreover, this matter of the curriculum is more or less standardised all over the British Empire. This is necessitated by the desirability of accepting diplomas as being of equivalent value in whatever part of the Empire obtained—a great advantage. All the same, you can make your views and your influence felt. That the curriculum is badly in need of revision I have personally no doubt whatever, and it is good to know that this revision is being undertaken. A number of subjects demand attention—genetics or the science of heredity, psychology, and dietetics, to name three important ones that occur to me. But the curriculum is already over full, say some. Agreed, then we ought to take out parts of those subjects that are, relatively to these and others I might mention, unimportant. If the pre-clinical studies in particular are more closely adapted to the special requirements of the budding doctor, invaluable time may be saved. That the clinician should spend many hours teaching the student in the wards and in the out-patient room, facts which really belong to physiology and anatomy and chemistry, is heartbreaking. And it is equally heartbreaking to find, towards the end of his curriculum, that there is no time to teach him the subjects to which I have referred. I regard this matter as so vital that I think nothing has given me greater satisfaction, Mr. Vice-Chancellor, than to hear from you that in Adelaide University the scientific subjects are taught to those students who are intending to become doctors, with due recognition of this fact, so that a maximum concentration is made upon the ultimate purpose of their career from the very first.

You are fortunate in Adelaide, as elsewhere in the Commonwealth, in that the only avenue of entry into the medical profession is through the University. You are aware, Mr. Vice-Chancellor, of the difficulties and complications in this matter at home, where a large percentage of our doctors take an extra-university diploma. Now this latter procedure has at least one saving benefit: it keeps the student in very close touch with his hospital. And that is essential. The teaching of medicine differs fundamentally from the teaching of any other profession in this—that its success is entirely dependent upon close contact between the student and clinical material, that is, the patient. It was a dictum of the great French clinician, Trousseau, "les malades, toujours les malades," a dictum which might well be written up in large letters over the entrance to a medical school. That is another reason why the pre-clinical studies should not be too long drawn out. They are necessary, vitally necessary; but the sooner the embryo doctor comes in contact with the patient, and keeps this contact, the better for both of them. Of course the young doctor should have made contact with his fellows long before this, and should have trained himself to observe. The power of observation and an intense interest in human beings are much better indications that a boy will make a good doctor than finding him dissecting a fly or ill-treating a frog, which are the more traditional signs that he was destined for the career of medicine. As I say, this close fusion of the academic with the clinical aspects of his work is paramount for the medical student. Your facilities for this in Adelaide seem

to me to be quite exceptional. Quite apart from your aesthetic advantages, and the amenities of quiet, air, and light, the geographical features are ideal. The proximity of the university to the hospital is such that the liaison can be of the closest. A stone's throw separates the class-room and the lecture theatre from the wards, the out-patient rooms, and the special departments. In passing, I should like to congratulate the hospital authorities upon the magnificent lay-out of the buildings and their perfect adaptability to hospital needs. The wards combine the best hygienic conditions with that touch of homeliness which is so important a factor in the patient's recovery.

THE PLACE OF RESEARCH

If I miss anything in all this paradise of hospital service and university culture—and it is a product of that experience of which I spoke when I began that it gives one the power of detecting the weakness as well as the strength of any system of medical education—if I miss anything, it is in the field of research. But as soon as I inquire about this I am made aware of efforts already under way towards repairing this breach in what is otherwise such an attractive and efficient edifice. I understand there is a scheme afoot by which all this valuable clinical and pathological material shall be utilised, not only for the direct teaching of medicine, but for the furthering of medical science and medical treatment.

Quite apart from the enormous value of such a scheme in this direction, its value in raising the prestige of the university and of the hospital still higher, and its moral effect upon the student at every step in his career, will be incalculable. Such an "Institute of Medical Science" would knit together the present hospital service, the clinico-pathological investigations, and the post-mortem findings as nothing else could do. I spoke of the moral effect upon the student. May I, with all deference, speak of the moral effect of such an institute upon the teachers? That, too, would be incalculable. I do not know what departments are so far envisaged in the new block which, I assume, such a conception would make necessary. But I imagine they would include one in which the clinico-pathological investigations are analysed and correlated; another in which the invaluable post-mortem materials are studied in greater detail than can be done in the post-mortem room itself; still another which is devoted to public health affairs; and a series of small laboratories for researches undertaken by the staff, and by senior students. The present museum would probably be transferred to one floor of the building. I have no doubt that all sections at present controlling and administering the hospital and the medical school will work enthusiastically towards this project, so essential to the professors, the students, the doctors, and the public. How truly have you said, Sir, "the function of a medical school is not only to spread knowledge, but to make it."

ESSENTIALS IN EQUIPMENT

I am speaking to-day on a memorable occasion in the history of the Medical School of the University of Adelaide. This year the school celebrates its jubilee. Fifty years may seem a short time, but we must not forget that medical teaching, of any systematised sort, has only existed anywhere in the world for about twice that period. And whatever

we may think about the Art of medicine, the past 50 years comprise practically the whole of the Science of present-day medicine. You think you are young, but much of what was taught to the medical student 50 years ago is already outworn, if not positively dangerous. If anyone in Adelaide, concerning himself with the teaching or with the learning of medicine, thinks he lacks advantages which we at home enjoy, let him get rid of that particular thought as soon as possible. For what are the essentials in the equipment of the good doctor? There are the traditions of our profession to begin with. The imperishable nature of these, and their enormous influence upon the medical man—and therefore their great value to his patients—cannot be exaggerated. But these traditions are shared equally by young medical schools and old. They date back at least 2000 years. Next comes the calibre of the young doctor himself. I have had many Australians amongst my students, and I am quite sure that in brains, and in personality, they take a place second to none. Do I see the best of them perhaps? If I do, then so much the better for me. I think it is a pity that more of them do not come back to the land of their birth and of their early training—a land to be proud of and to work for. Not that we do not like them to remain with us: personally, to use a vulgarism, I "fall for them" every time, as I do for Irishmen and for sailors. But ought we to keep these men and these women? My conscience is a little disturbed about them, because I am not clear that we deserve the best that you produce. Moreover, if a country creams off even a portion of its best men and women, and loses them, and loses their offspring, though this may be a great gain to others, it must inevitably be a loss to the land that bred them.

Next comes the personnel of the teachers. I can concede nothing on this point. Great names have emerged from Adelaide. You, Sir, have already mentioned some of these: Bragg, Rennie, Stirling, Robertson, Watson, and Virco, concerning whom you, Sir, have spoken so eloquently (and who I had formerly thought had no vice until you told us that he never took a holiday. It is good and encouraging to know that Joseph Virco was no better than the rest of us)—to say nothing of those stalwarts who are still with you, and concerning whom it were invidious to speak. Then again, Adelaide has made large contributions to the teaching staffs of other schools in the Commonwealth. Lastly, the materials for teaching. I have already dealt with these. There is more than a quarter of a million people to feed the hospital and 500 beds to cope with this population, so that the fear at present is a wastage of clinical material rather than a paucity of it. It is my bent to look for what, to use another vulgarism, are termed "snags." I can see none. Unless it be this Institute of Medical Science within your walls, the contemplation of which has now led to the beginning of practical measures, and whose establishment would be a fine tribute to the work which the school has done in the past 50 years.

On behalf of my colleague and myself I offer the Medical School of Adelaide our warm congratulations upon the attainment of its jubilee. With traditions that it shares with all of us, with ideals which are no less high than those that imbue Australians in general, with unexcelled advantages, both academic and practical, it can surely not fail to achieve that success in the future which we so ardently desire for it.

ACUTE PANCREATITIS IN CHILDHOOD

REPORT OF A CASE

BY R. H. DOBBS, B.Chir. Camb.

LATE RESIDENT MEDICAL OFFICER, THE PRINCESS ELIZABETH OF YORK HOSPITAL FOR CHILDREN, LONDON

ACUTE pancreatitis of severe degree is rare in childhood. Mild attacks of what is presumed to be pancreatitis occasionally develop as a complication of some of the acute specific fevers, notably mumps. Farnham¹ collected 119 cases of mumps pancreatitis all but 2 of which recovered without operation. Of these 2, one was operated upon and later made a complete recovery, and the other, originally reported by Lemoine and Le Passet,² came to autopsy. In both of them typical acute pancreatitis was found.

Apart from mumps the condition is extremely rare in children, and it may be useful to give an account of a case recently under the care of Dr. Leonard Findlay, at the Princess Elizabeth of York Hospital, with a summary of 14 others I have found on record in which the patient was under fourteen.

CASE RECORD

The patient, a girl 12½ years old, was admitted on June 11th, 1934, suffering from headache and vomiting. The birth and development had been normal, and the clinical history had been uneventful until this year. She had contracted measles, diphtheria, and (be it noted) mumps by the age of 6, and had had two attacks of erythema-nodosum [sic], one at 9 years and one in April, 1934. Her subsequent history both before admission and during the first few weeks in hospital, though of great interest in a different connexion, scarcely needs detailed reporting.

The story was that late in April, soon after the second attack of so-called erythema nodosum, the patient had fallen ill with left-sided earache and aural discharge, which some ten days later was followed by mastoid tenderness. She was transferred to the local hospital where the discharge and tenderness subsided. On May 21st, however, she had fever, headache, and nuchal rigidity, and a lumbar puncture was performed. The fluid was sterile but contained 400 cells per c.mm., of which 70 per cent. were polymorphonuclear. The condition once again subsided, but early in June headache, vomiting, and nuchal rigidity returned; the patient became drowsy, in which state she remained until her admittance to this hospital on June 11th, 1934.

On admission to the Princess Elizabeth of York Hospital the patient had a subnormal temperature, a slow pulse-rate, a slight right-sided facial paresis, and a nominal aphasia, which made it clear that she had a left-sided temporo-sphenoidal abscess. On June 15th the abscess was needed through a half-inch trephine hole by Mr. Charles Keogh, and 30 c.cm. of thick yellow pus was withdrawn from which *Streptococcus pyogenes* was grown. The patient after a few stormy days appeared to make an uneventful recovery. It may be noted that at no time whilst in this hospital did she have any aural symptoms, and that the ear appeared normal on inspection, as did the mastoid region on physical and radiological examination, and that no operation was undertaken beyond the trephine hole three inches above and two inches behind the root of the zygoma.

The patient appeared to be doing excellently when, on June 27th, the twelfth day after drainage of her cerebral abscess, she was taken suddenly ill at 3 A.M. with severe abdominal pain and repeated vomiting. When first examined during the morning round, the patient pointed to the epigastrium as the site of her pain, but the abdomen was lax and no physical signs could be elicited beyond tenderness on deep palpation in the epigastrium and those of a general nature—i.e., she was shocked, had a temperature of 97° F., and a pulse-rate between 90 and

100. It then transpired, only from the assertion of the child aged 9 years in the next bed, that the day before the patient had attempted to get out of bed when no nurse was looking and had fallen face downwards across the side of the bed. She had thereupon got into bed laughing but admitted that she had hurt her "tummy" slightly. The significance of these symptoms not at first being realised, it was thought that the return of vomiting indicated a relapse of the cerebral condition. The abdominal pain remained on this basis unexplained.

The abdominal pain and repeated vomiting continued throughout that day and the next, and on June 29th, two days after the onset, the condition of the patient was much the same but the rectal temperature had risen to between 99° and 101° F., the pulse-rate to 120–130, and a slight but definite rigidity mainly of the right rectus made its appearance for the first time. A blood count showed a leucocytosis of 42,000, of which 92 per cent. were polymorphonuclear, and the urine contained no albumin, pus, or sugar. A diastatic index was not performed. A provisional diagnosis of acute appendicitis was made, though it was realised that this was unsatisfactory.

An exploratory laparotomy was determined upon and carried out by Mr. H. W. S. Wright. The abdomen was opened through a right paramedian incision. On opening the peritoneum a large quantity of slightly blood-stained fluid escaped; the great omentum was engorged and oedematous and thickly studded with areas of fat necrosis; the duodenum and under-surface of the liver appeared normal; the pancreas was very hard and moderately enlarged; the gastrocolic omentum over the pancreas was engorged and also studded with fat necrosis; the gall-bladder and bile-ducts were palpated and appeared to be normal but were not explored. The condition was diagnosed as acute pancreatitis, and a drainage-tube packed round with gauze was put down to the surface of but not into the pancreas; a second tube was inserted beneath the liver and the abdomen was closed.

A specimen of urine collected immediately after operation showed a diastatic index of 512 units, compared with 16 units of a control patient's urine.

The patient made a rapid recovery. There was some vomiting for the first 24 hours and the skin round the wound became sore and slightly septic for a week. The packing was removed on the 12th day and the tube on the 14th day. By the 26th day the wound was healed and the child again well. She was sent to a convalescent home, and on Sept. 11th, just three months after admission, she was well and lively with normal ear-drums, a healed trephine wound, and healed abdominal wound; and by Nov. 6th the diastatic index had returned to normal.

The results of the urinary diastatic estimations show the gradual return to normal during the course of 18 weeks:—

Date in 1934.	Patient.	Control.
June 29	512 units.	16 units.
July 2	128 "	16 "
" 9	64 "	16 "
" 23	64 "	16 "
Sept. 11	32 "	16 "
Nov. 6	16 "	16 "

This history has several features of interest. It may be noticed in passing that there is an alleged second attack of erythema nodosum. This, though it has been reported, is not common, and reliable cases are rare. It is significant that the Mantoux reaction to 1/1000 tuberculin was negative on admission.

The patient contracted acute pancreatitis whilst under observation in hospital, two weeks after a large collection of pus had been removed from a quite remote part of the body. At the time it seemed possible, even probable, that there was a relationship between these two events, and the literature of the subject was examined to ascertain, first, the frequency of acute pancreatitis in children, and,

secondly, whether remote sepsis is commonly an ætiological factor.

FOURTEEN RECORDED CASES.

The cases discovered may be summarised as follows:—

CASE 1 (Herzog³).—Child of 2 years, previously healthy. Sudden onset of pain followed by repeated vomiting. The pain subsided in a few hours, but vomiting was repeated and patient's condition gradually worsened and he died suddenly 22 hours after onset of first symptoms. Post mortem a six-centimetre round-worm was found mixed with vomit in the hair near right ear. Peritoneal cavity blood-stained but no free fluid; many areas of fat necrosis in mesentery and colon; pancreas dark red with many hæmorrhagic areas throughout its substance. Cause: ? due to round-worm.

CASE 2 (Gallie and Brown⁴).—Boy, aged 2½. Sudden abdominal pain, doubling up, pallor, and repeated vomiting for nine hours when pain ceased. Obstreperous child, did not appear ill. Under anaesthesia, firm fixed abdominal tumour felt in epigastrium. Operation 48 hours after onset: blood-stained fluid in peritoneal cavity; tumour found to be very firm swollen pancreas; pancreas and omentum covered with areas of fat necrosis; gall-bladder distended but emptiable; biliary tract normal; abdomen closed without drainage. Uninterrupted recovery. Vomited round-worm 15 hours after operation. Cause: ? due to round-worm.

CASE 3 (Holzman⁵).—Boy, aged 3. Sudden abdominal pain; passed blood per rectum; vomited. Seen 24 hours later he was much shocked; abdomen full, tender, resistant in epigastrium. Operation: blood-stained fluid in peritoneal cavity; nil else abnormal, except very red in pancreatic region. Patient died. Post mortem: fat necrosis all over peritoneum, mesentery, and pancreatic region; pancreas swollen and red, cross-section showed many hæmorrhagic areas; biliary tract normal. Cause: none found.

CASE 4 (Mackenzie⁶).—Girl, aged 3 (congenital idiot). No history of mumps. Patient suddenly collapsed and died. She had had follicular tonsillitis two weeks previously, since when she had been of a poor colour and had had occasional attacks of vomiting with abdominal discomfort. Post mortem: fat necrosis on mesentery and complete necrosis of pancreas. Cause: ? septic embolus in pancreas.

CASE 5 (Anderson⁷).—Girl, aged 4. Sudden onset of abdominal pain; vomited repeatedly; much shocked. On examination three hours later: abdomen distended, not rigid; vomiting repeatedly. Patient died an hour after admission to hospital. Post mortem: 200 c.cm. blood-stained fluid was found in peritoneal cavity; areas of fat necrosis on omentum and large intestine; retroperitoneal hæmorrhage over transverse colon; biliary tract normal; acute duodenitis; pancreas swollen and œdematous, section showed many hæmorrhagic areas. Cause: unknown.

CASE 6 (Désjardins⁸).—Boy, aged 5. Two hours after midday meal complained of sudden violent abdominal pain; vomited. Two days later admitted to hospital; vomiting continuously, much shocked, with distended abdomen and blue discoloration around the umbilicus. Operation: blood-stained fluid in abdominal cavity; fat necrosis on mesentery; abdomen closed. Second operation on eighth day for evacuation of more fluid. Patient died seventeen days after onset. Post mortem: head of pancreas entirely necrotic; biliary tract normal; no helminthiasis. Cause: unknown.

CASE 7 (Hagedorn⁹).—Boy, aged 7. Run over by cart; wheel crossed abdomen. Immediate severe abdominal pain and repeated vomiting. Operation twenty-four hours later: blood-stained fluid in peritoneal cavity; fat necrosis on mesentery and omentum; no visible or palpable lesion of pancreas. Abdomen closed without drainage. Healed in eight days. Urine never contained sugar. Cause: trauma.

CASE 8 (Phélip¹⁰).—Child, aged 7. Typhoid at 6. Sudden onset of violent abdominal pain; immediate and repeated vomiting. Four days later: pale, ill child with "peritoneal aspect"; abdominal tenderness, no rigidity; transversely placed tumour high up in the epigastrium. Operation: tumour in mesocolon covered with yellowish areas of fat necrosis. Patient died five days after onset. Post mortem: no free fluid; tumour revealed as firm swollen pancreas; biliary tract normal. Cause: unknown.

CASE 9 (Dietrich¹¹).—Boy, aged 10. Fell in front of cart; wheel crossed upper abdomen; complained of great pain and vomiting, which persisted for ten days. Examination ten days after accident: very ill child in great pain; abdomen distended and everywhere tender. Operation: no free fluid in cavity; round cystic swelling, size of hen's egg, containing whitish sterile fluid, above transverse colon; pancreas covered with fat necrosis. Patient very ill for three days; sugar found in urine. Eventually recovered. Cause: trauma.

CASE 10 (Foged¹²).—Girl, aged 11; previously healthy. Vague abdominal pain for last three months; sudden onset of paroxysmal abdominal pain and frequent vomiting; patient's condition became considerably worse during course of three days. No urinary symptoms or jaundice; urine clear. Abdomen distended; tenderness everywhere; soft mass felt in right iliac fossa. Operation third day after onset: blood-stained fluid in peritoneal cavity; fat necrosis on mesocolon and omentum. Patient died soon after operation. Post mortem: large retroperitoneal mass of blood; many fat necroses everywhere; pancreas enormous, infiltrated with blood; biliary tract normal; no helminthiasis. Cause: unknown.

CASE 11 (Novis¹³).—Hindu girl, aged 12. Onset of severe abdominal pain with vomiting. Condition subsided but pain returned without vomiting during the next eight days. Examination: thin girl, did not appear ill; abdomen not distended; rigid right rectus and tender swelling in epigastrium; urine normal. Observed for a week and had attacks resembling biliary colic. Operation about two weeks after onset: no free fluid; pancreas greatly enlarged; pancreas incised and two round-worms picked out from length of pancreatic duct; pancreas stitched and abdomen closed. Patient passed several round-worms after administration of santonin. Recovery uninterrupted. Cause: round-worms.

CASE 12 (Dobrowsky¹⁴).—Girl, aged 12. Ran heavily into a barrier; forty-eight hours later severe abdominal pain. Operation: blood-stained fluid and fat necrosis in peritoneal cavity; large hæmatoma of pancreas. Abdomen closed. Patient recovered. Cause: trauma.

CASE 13 (Vogel¹⁵).—Girl, aged 13. Operation undertaken for severe acute pancreatitis. Patient died. Post mortem: typical acute pancreatitis; common opening of pancreatic and common bile-ducts. Cause: unknown; ? congenital abnormality.

CASE 14 (Sobening¹⁶).—Girl, aged 13. Operated on for cholelithiasis. At operation a stone was found impacted in papilla of Vater; fat necrosis on pancreas. Stone removed. Patient recovered. Cause: cholelithiasis.

COMMENTARY

The signs and symptoms, though not pathognomonic, are at least suggestive, and occurring in an adult would, I feel confident, give rise to a suspicion that the pancreas might be at fault. In every case except two, in which no mention was made, there was a history of a sudden onset of severe abdominal pain and repeated vomiting, both lasting until operative measures or death supervened. Examination revealed shock, usually of considerable extent, with generalised abdominal tenderness and, as a rule, a significant absence of marked abdominal rigidity. In the adult attention is often drawn to two further signs which might suggest the diagnosis.

First, a cyanotic or livid hue of the face, supposed to be brought on by interference with the movement of the diaphragm; secondly, a blue discoloration of the external abdominal wall around the umbilicus, which is of course produced by an infiltration of altered blood pigments through the parietes from the blood-stained fluid within the peritoneal cavity. In no case was the former, and in only one—No. 6—was the latter sign mentioned; and in this case the question was not pursued further.

Finally, when acute pancreatitis is under consideration, three laboratory tests may be made: Loewe's eye test, Cammidge's test, and Wöhlgemuth's urinary diastase estimation; the last of which at least will establish the diagnosis beyond question. Cohnheim¹⁷ knew of and described a starch-splitting ferment in the urine of normal subjects as long ago as 1863. In 1908 Wöhlgemuth¹⁸ worked out a method of estimating this substance, and later he,¹⁹ and in this country Corbett,²⁰ established the value of the urinary diastatic index in the diagnosis of acute pancreatitis.

Ætiology.—In 6 cases no definite cause was found. In one (No. 13) a congenital abnormality of the ducts was present, and in another (No. 5) acute duodenitis; but it seems idle with such scanty evidence to speculate upon possible ætiological factors.

Trauma accounted for 4 cases. This is a rare but well-recognised cause of acute pancreatitis. Dietrich,¹¹ in a long article on pancreatitis, has a section on "Pancreatitis acuta traumatica," and Leith²¹ quotes 7 cases due to crushing accidents, severe blows in the epigastrium, or abdominal shot-wounds. Experimentally, the disease appears to be very difficult to produce in this way. Brocq, who discards trauma as an ætiological factor, produced bruising and even complete pulp of the pancreas with a hammer, but invariably the animal (dog) had to be killed some days later to reveal only hæmatomata of the pancreas, or, as he laconically puts it, "Tête du pancreas couleur lie de vin," with no evidence of liberation of pancreatic ferments.

Round-worms were certainly the cause in one case (No. 12), and presumably in two others (Nos. 1 and 2). Rigby²² reports a similar case with a fatal issue in which, post mortem, a round-worm was found protruding from the papilla of Vater and lying in the duct of Santorini; and Sabrazès, Parcelier, and Bonnin²³ collected 19 cases in which *Ascaris lumbricoides* was found in the pancreatic duct. Of these, four (Rigby's, Novis's Case 11, and two others) had clinical pancreatitis, and one other had a pancreatic cyst. It is not difficult to see how the presence of a foreign body in the pancreatic duct could allow bile or duodenal contents to enter and activate trypsinogen with consequent pancreatitis.

In one case (No. 14) the disease was of the adult type, occurring together with acute cholelithiasis.

Lastly, in one case only (No. 4) was there any mention of sepsis elsewhere in the body, the patient dying suddenly a fortnight after an attack of acute follicular tonsillitis. Complete necrosis of the pancreas was found post mortem, which must have developed gradually and possibly followed an embolic abscess from the primarily infected tonsils.

It will be seen that there is little evidence either to oppose or support the contention that, in the present case, the brain abscess was primary to an embolic pancreatic abscess. The only other group the case might be placed in, besides the largest one of "cause unknown," is that of trauma. The history of injury was, however, only on the testi-

mony of another child and was probably only slight; there were no symptoms until twelve hours later, though Dobrowsky's case (No. 12) shows that the onset is not always immediate.

Treatment and Prognosis.—Including the present case, 12 patients were operated upon, of whom 7 recovered. Three others died before operation could be undertaken. It is thus difficult to assess the value of operation, but it seems probable that an outlet for the pancreatic ferments and the blood-stained fluid which always collects will at least cut short the progress of the disease, and from this point of view the sooner operation is undertaken the better. The ultimate prognosis, if the operation is survived, is uniformly good. There appeared to be complete recovery in every case and no symptoms referable to the pancreas are mentioned after the patients had been discharged from hospital. Our own patient was quite fit in nine weeks, though it is interesting to note that the urinary diastase did not return to normal until a few weeks later.

SUMMARY

(1) A case of acute pancreatitis in a child aged 12, following upon a brain abscess, is described. The ætiology is discussed in the light of 14 other cases here summarised. (2) Acute pancreatitis in childhood is usually an accidental finding at an abdominal operation or post mortem. This is due partly to the rarity of the condition, and partly to the fact that its causes are quite different from the commonest causes of acute pancreatitis in the adult. The symptoms and signs may be sufficiently distinctive, however, to arouse suspicion of the true nature of the condition and the suspicion can be confirmed by the urinary diastase test. (3) Acute pancreatitis in childhood is very seldom ætiologically related to a diseased biliary tract. Trauma accounts for many cases and *Ascaris lumbricoides* for a few; but in the majority no cause is found. Septic emboli lodging in the pancreas may occasionally be responsible. (4) Operation should be undertaken promptly to allow of rapid removal of destructive ferments and the blood-stained fluid which is always present.

My thanks are due to Dr. Leonard Findlay for permission to report this case and for many helpful suggestions.

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age of 3 years has practically 100 per cent. mortality. Close, after discussing 17 cases in which resection was performed without a single recovery, mentions the following case: "It may be a significant fact that in one patient who survived in spite of a gangrenous intussusception, no resection was undertaken and that a spinal anæsthetic was given. A lateral anastomosis was made above and below the obstruction which was left in situ."³

A modified type of resection operation, which has the advantage that no anastomosis has to be made, is that suggested by Bowerman Jessett and first performed by A. E. Barker. In this operation the neck of the intussusception is stitched and the gangrenous intussusceptum is removed through an incision in the ensheathing layer. Some successes have been claimed, but technical difficulty and risk of sepsis at the time of operation, and the liability to stenosis at the neck later, make it an unreliable procedure.

Resection is the usual treatment adopted because attention has been focused on the gangrenous intussusception as a possible source of peritoneal infection or severe intestinal hæmorrhage. But it has been shown that even in fatal cases untreated by operation peritonitis is rare, as the gangrene is limited to the intussusceptum and the ensheathing layer is usually healthy. The alternative, an artificial anus, always seems to be unsatisfactory in children, especially in this condition, since the drainage from the small intestine produces rapid and usually fatal dehydration.

Lateral anastomosis relieves the obstruction and largely avoids the shock and dehydration associated with resection and ileostomy respectively. This method of treatment was first advocated by Parry⁴ in 1909 when reporting a successful case in a child aged 6 months. Rutherford⁵ in the same year published a second success with the same method, and more recently Montgomery and Mussil⁶ have described two more cases of infants 7 and 8 months old.

CONCLUSIONS

(1) Intussusceptions which on laparotomy prove to be irreducible have often shown indefinite signs and symptoms before operation. (2) The lethal factor in these cases is intestinal obstruction, while peritonitis originating from the gangrenous loop is a rare complication. (3) When the element of obstruction is removed, no serious ill-effects have been observed from the retention of gangrenous intestine in the bowel for several weeks. (4) Lateral anastomosis to short-circuit the obstruction offers the best chance of recovery.

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STAFFORDSHIRE MENTAL HOSPITALS.—At a meeting of the Staffordshire Mental Hospitals board it was reported that the Cheddleton Mental Hospital visiting committee have accepted tenders amounting to approximately £60,000 for the provision of an admission hospital, convalescent villas, and additional accommodation for nurses. At Stafford and Burntwood, the other two hospitals administered by the board, there is also considerable overcrowding.

PYROTHERAPY IN DEMENTIA PRÆCOX

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TREATMENT by the injection of fever-producing substances, termed pyrotherapy or protein shock, has been tried in many conditions. The moderate success attained in neurosyphilis has led to trial of this method in other diseases of which the organic basis is still uncertain.

Dementia præcox is responsible for about 16 per cent. of all admissions and 60 per cent. of chronic cases in public mental hospitals. The hopelessness of the prognosis makes empirical treatment the only alternative to the fatalistic attitude which is so universal. At Plymouth Mental Hospital the means of inducing fever which we have used are Sulfosin and a preparation called Dmelcos. In all, 34 female patients have been treated up to the end of 1934, 7 by sulfosin and 27 by dmelcos.

Sulfosin, a suspension of sulphur in oil, has been used since 1927 by Schroeder.¹ In 1927 Minski² reported a series of 20 cases with 2 recoveries, 1 much improved, 1 short remission, 1 much worse, 15 showing no change. As recommended by Schroeder, sulfosin was given intramuscularly on the lateral side of the thigh between the upper and middle thirds of the femur. Beginning with a small dose (1 c.cm.) injections were given twice weekly over a course of twelve injections; the dose was gradually increased up to 10 c.cm. according to the response. Temperatures up to 104° F. were obtained. Sometimes a secondary rise occurred on the second day after the injection. No abscesses or other complications were produced. Some pain and stiffness at the site of injection were relieved by hot fomentations. This painful reaction is the chief objection to the treatment.

Mackay³ believes that the fever is caused by the liberation of protein from necrosed muscle and so sulphur-therapy can be regarded as a form of protein shock.

Dmelcos, a stabilised atoxic vaccine of Ducrey's bacillus, is given intravenously. No local reaction has been observed even when it has been accidentally injected into the subcutaneous tissues. The vaccine is primarily intended for the treatment of soft sore and its complications. The course consists of six injections of 1, 1.5, 2, 2.5, 3, and 3 c.cm. respectively, each cubic centimetre containing 225 million organisms. Injections are given on alternate days. The rise in temperature was rapid commencing 4-14 hours after the injection; the maximum was reached in about 4 hours; the fall to normal in 5 or 6 hours; the whole reaction lasting for 9 or 10 hours. Rigors were observed in about half the cases. The initial dose of 1 c.cm. produced a temperature of from 101° to 102° F.; afterwards rises up to 104° F. or higher were common. In 4 cases of this series a second course of six injections was given with similar results. In 12 cases the injections were given on consecutive days with no untoward results.

In addition to the usual signs of fever—such as flushed face, headache, rapid pulse, and thirst—vomiting occurred in many cases. But on each occasion the pulse-rate fell with the temperature. Diet consisted mainly of fluids during the fever and aperients were given when required. Towards the end of the course the tongue was furred and the patients showed signs of exhaustion. Loss of weight was negligible and all the physical signs cleared up immediately on cessation of the injections.

In 24 cases there was an immediate response; the remaining 10 showed no appreciable change. The improvement was most marked in the katatonic type. While it lasted, violent and impulsive patients became manageable and easily nursed in an open

dormitory; mute resistive patients became talkative; even stuporous cases appeared more aware of their surroundings. Unfortunately these promising reactions persisted for only a few days in 9 cases. In 5 of the series the patient had a period of from two to three weeks in which she was more accessible, and 6 were sent to the occupational therapy department where the remission persisted for periods up to three months. These had previously been found unemployable by reason of negativism or simple apathy. Four patients were discharged as recovered.

TREATED AND UNTREATED CASES COMPARED

From 1932 to 1934, in order to assess the value of the treatment, all cases of dementia præcox admitted to the hospital were given pyrotherapy. Controls were provided by searching the hospital records for dementia præcox admissions in the period 1928-30. Most of these are still resident with all the symptoms well established; so that the original diagnoses can hardly be called in question. Care was taken to exclude all doubtful cases among the recent admissions. Thus a fair basis of comparison between the treated and the untreated was established.

The results of this investigation were as follows:—

			1932-34 Treated.		1928-30 Untreated.
Recoveries	..	..	1		1
Partial remissions	..	..	2		—
Transferred	..	..	4		—
Died	..	..	1		2
Chronic	..	..	11		14
Total	..	..	19		17

At first glance these figures may not appear to offer much recommendation for the treatment. The recovery-rate remains the same in spite of the labour involved in giving injections, the extra work thrown upon the nursing staff, and the expense borne by the hospital. No form of special therapy, however, can be considered apart from general treatment which, in dementia præcox, is mainly directed towards bringing back the patient to reality, and remoulding the personality. The chief value of pyrotherapy is that it temporarily breaks the vicious circle, and makes the schizophrenic patient more approachable and amenable to suggestion. About one-third of the cases classified as chronic are now usefully employed in handicrafts. Many have had further courses of pyrexial treatment with marked benefit. In course of time, as occupational therapy becomes more highly organised, it is hoped that many more will be saved from complete deterioration. Pyrotherapy, then, can be regarded simply as an introduction to the only rational form of treatment, which is psychotherapy disguised as intensive occupation. The simplicity of technique and absence of dangerous complications makes treatment by sulfoxin and dmelcos eminently suitable for public mental hospitals.

CASE-HISTORIES

The following summaries show the course of the illness in those patients who recovered.

CASE 1.—Female, aged 27, married. Father insane and committed suicide. Previous history: born in Hong-Kong of English parents; contracted malaria in childhood; reserved by nature, but could be jolly on occasion; a good tennis player. Present illness began in May, 1931; she attempted suicide by gas poisoning and was admitted to hospital in June, 1931. On admission was extremely negativistic, refused food and resisted treatment and smeared herself with faeces; had bouts of senseless rage and meaningless laughter; stripped herself naked;

said her head and body were not her own and that she was a boy not a woman; made violent attacks on staff and other patients; required seclusion; physical condition excellent. She continued in this state until April, 1932, when dmelcos was given. The highest temperatures recorded after each injection were 102.3°, 103.6°, 102.6°, 102.6°, 102.2°, and 102.6° F. She had no rigors but vomited twice. There was an immediate response to the fever; she became more talkative and conversed rationally with her husband. She was no longer faulty and destructive and could be nursed in an open dormitory; she relapsed slightly in May, 1932, when sent home on four days' leave. She continued with light handiwork occupation until discharged in March, 1933. Examined a year later, she appeared to have made a complete recovery which has been maintained up to the present.

CASE 2.—Female, aged 19, single. Mother had a nervous breakdown following childbirth. Previous history: normal childhood; became a domestic servant; was said to be devoted to her father; was a rather serious, religiously inclined young woman; had quinsy four months before her mental illness with good recovery. Present illness: onset sudden after a period of insomnia; became restless, noisy, confused, and talked incessantly; admitted to hospital as a temporary patient in November, 1931. On admission was noisy, restless, divorced from reality, manneristic, faulty, and degraded in habits; she refused food and had to be artificially fed; physical condition moderately good. She continued in this state hallucinated, destructive, resistive, and inaccessible; lost weight rapidly. In April, 1932, dmelcos was given; highest temperatures recorded were 102.6°, 103.6°, 103.4°, 102.4°, 102.4°, and 102.4° F. There was no immediate improvement except that she became more docile and easily nursed. In the next three months she rapidly put on weight. She gradually made a partial readjustment under continued directed occupational therapy. Discharged in August, 1932, rather fatuous but with some insight. Recovery completed at home where she has remained well up to the present.

CASE 3.—Female, aged 21. Family history, negative. Previous history: rather a spoilt child brought up in religious atmosphere; admitted masturbation; was a mental nurse for a short period but showed no application. Present illness began one month before admission; she became moody, obstinate, and said she had lost her soul; tried to jump out of window and destroyed clothing. She was admitted to mental hospital under certificate in June, 1934. On admission she was in good physical condition, but dull, apathetic, and indifferent to her surroundings; later she became over-active, destructive, and impulsive; expressed ideas of death, masturbated openly; showed negativism, giggled foolishly, and grimaced. A course of dmelcos was given in July, 1934. Highest temperatures recorded 100.2°, 100°, 100°, 100.4°, 100°, and 100° F. After the injections she was more easily managed and her habits improved. She remained, however, dreamy, self-centred, and inclined to withdraw from others. Sent to occupational therapy department and proved a rapid and efficient worker. Had slight relapse in August, 1934, but gradually improved and was discharged in September, 1934, as recovered. Improvement maintained.

CASE 4.—Female, aged 27, married. Grandmother alcoholic. Previous history: intelligent, highly strung and given to worrying over trifles; she had a child four months before admission. Present illness: after a brief period of depression in which she expressed ideas of unworthiness, she passed into a mute resistive stuporous state; admitted to hospital in November, 1931, as a temporary patient; physical condition good, passed into excited phase; impulsively violent, erotic, faulty in habits; degraded and destructive. Dmelcos was given in April, 1932. Highest temperatures recorded 102°, 104.4°, 103.6°, 103°, 103.2°, and 102.4° F. Improvement followed immediately and she was passed on to occupational therapy department. She continued to be dreamy and self-absorbed, with feelings of unreality and a tendency to negativism and impulse. Discharged in May, 1932, with partial insight. Recovery completed in home surroundings; she has remained well since.

CONCLUSIONS

1. Thirty-four cases of dementia præcox were given pyrotherapy by injections of sulfosin and dmelcos. 2. Four recovered, 10 showed no improvement, 20 showed some improvement which lasted for varying periods. 3. Comparison of treated and untreated cases over a period of six years showed that no increase in the recovery-rate can be expected from this treatment alone. 4. Pyrotherapy is a useful preliminary to the re-education of schizophrenics by means of organised occupation. 5. The treatment can be repeated in chronic cases when a fresh attempt can be made to obtain the patient's coöperation. 6. Dmelcos has the advantage over sulfosin that there is no painful local reaction. The treatment is both simple and safe.

I am indebted to Dr. E. G. T. Poynder, medical superintendent of the hospital, for his help and suggestions.

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MEASUREMENT OF LOSS OF HEARING IN DECIBELS BY MEANS OF TUNING-FORKS

AND DETERMINATION OF HALF-AMPLITUDE-TIME

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CONSUMPTION, BROMPTON

THE measurement of hearing-power has lately been discussed in THE LANCET by Prof. Fraser-Harris¹ and by Dr. Phyllis Kerridge.² Prof. Fraser-Harris expresses the opinion that the audiometer will undoubtedly be used universally for all hearing measurements, and it certainly presents attractions which are apt to make us disregard its limitations. At the same time it would be a mistake to overlook the great advantages of tuning-forks such as otologists have long been in the habit of using.

The hearing, when tested by tuning-forks, has usually been expressed in percentages of hearing-power, whereas the audiometer gives it in loss of hearing-power as expressed in losses of sensation-units or "decibels." The advisability of charting defect of hearing in decibels has been stressed by Hallpike.³ It can be effected by means of tuning-forks with the simple calculation described below, and the results can be entered in the well-known audiometer charts, tuning-forks thus taking the place of the audiometer.

For this it is only necessary to know the rate (in seconds) of the dying-down of the amplitude of

vibration of the tuning-fork to one-half, called the "half-amplitude-time" (H-A-T).⁴ If we count the number of seconds for which the sound of the tuning-fork is heard by the normal person after the patient ceases to hear it ("duration-deficit") and divide this by the half-amplitude-time, we obtain the number of half-amplitude-times contained in the duration-deficit. We have then only to multiply this number by 6 (or strictly 6.021) to get the loss in decibels, as one half-amplitude-time is equal approximately to 6 decibels. It can be expressed in the formula:

$$\frac{\text{Duration-deficit}}{\text{Half-amplitude-time}} \times 6 = \text{loss in decibels.}$$

It can also be effected by dividing the duration-deficit by the half-intensity-period and multiplying by 3. The loss of hearing in decibels can then be registered by putting a mark at the appropriate level in each column in the audiometer chart now in vogue (Fig. 1). The half-amplitude-times for the forks I use are the following:—

d.vs.	16	32	64	128	256	512	1024	2048	4096
Pitch	C ₂	C ₁	C	c	c ¹	c ²	c ³	c ⁴	c ⁵
H-A-T	15"	10"	9"	4"	4.7"	2.3"	2.5"	6.5"	4.4"

In order to save calculation at the time of testing we can prepare a chart in the following way, showing the duration-deficits in seconds of each fork corresponding to the losses of hearing for every 10 decibels. The half-amplitude-time (in seconds) of the fork multiplied by 1.66 gives us the duration-deficit for a loss of 10 decibels; we enter this amount (or the nearest whole number) in the appropriate vertical column at the level of 10 decibels; at the level of 20 decibels we put twice that amount, of that of 30 decibels three times the amount, and so forth; the same process is carried out for each of the other forks. Fig. 2 is a chart thus prepared for the set of forks I use or for any other forks with the same H-A-T's.

To use the chart, we note the patient's duration-deficit for each fork and put marks in the corresponding positions on a blank chart, so getting a curve of the same nature as those obtained by testing with the audiometer, the left-hand column showing the amount of loss in decibels.

If it is desired to translate the loss of hearing in

⁴ Dundas-Grant: Jour. Laryng. and Otol., 1929, XLIV., 380, and 1934, XLIX., 233; and the description at the end of this paper.

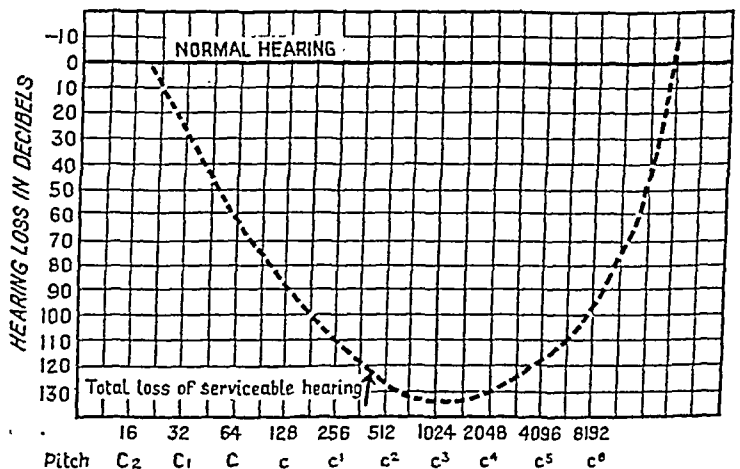


FIG. 1.—Audiometer chart.

¹ Fraser-Harris, D. F.: THE LANCET, 1934, II., 481.

² Kerridge, P. M. T.: Ibid., 1935, I., 104.

³ Hallpike, C. S.: Jour. Laryng. and Otol., 1933, XLIII., 19.

decibels into the amount per cent. of hearing-power, the following Table (as used by Dr. Phyllis Kerridge) is useful, especially for losses of more than 20 decibels:—

Loss of hearing in decibels.	Percentage of hearing-power.
0	100.0
10	10.0
20	1.0
30	0.1
40	0.01
50	0.001
60	0.0001
70	0.00001
80	0.000001
90	0.0000001
100	0.00000001
110	0.000000001
120	0.0000000001
130	0.00000000001

For lesser losses a table prepared by Miss K. Dickson starts from the datum observed by her that a loss of hearing in seconds equal to the half-amplitude time of the fork (or a loss of 6 decibels) corresponds to a reduction of hearing to 25 per cent. of normal hearing-power; similarly a loss to the extent of half a half-amplitude-time (or 3 decibels) represents 50 per cent. hearing-power. All percentages are

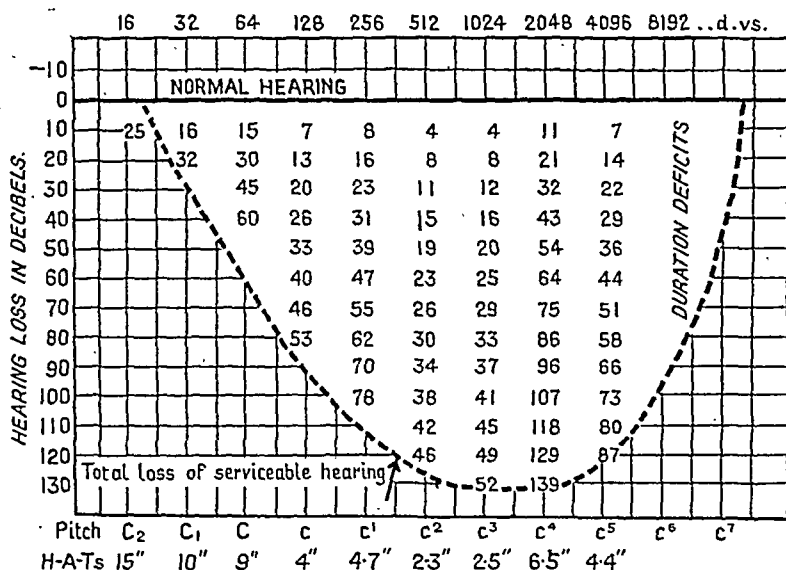


FIG. 2.—Chart showing decibel losses for duration deficits.

mirror (as used for galvanometers) is fixed by means of wax on the outer side of one blade of the tuning-fork close to the tip and a counter-weight on the other blade, as in Lissajou's classical experiment. The fork is fixed in a firm vice and a light is directed on to the mirror from a spot-light or, if more convenient, from the otologist's own bull's-eye lamp, unfrosted and fitted with a metal or cardboard diaphragm having a central perforation $\frac{1}{2}$ mm. in diameter (Fig. 3). The light directed on the mirror is reflected from it, as a luminous dot, on to a sheet of cardboard. When the fork is set in vibration the dot changes into a vertical line (Fig. 3 and Fig. 4A) which shortens more or less rapidly, the time required for it to shorten from any length to half that length (half-amplitude-time) being ascertained by means of a stopwatch. Any definite "waxing and waning" of the amplitude would

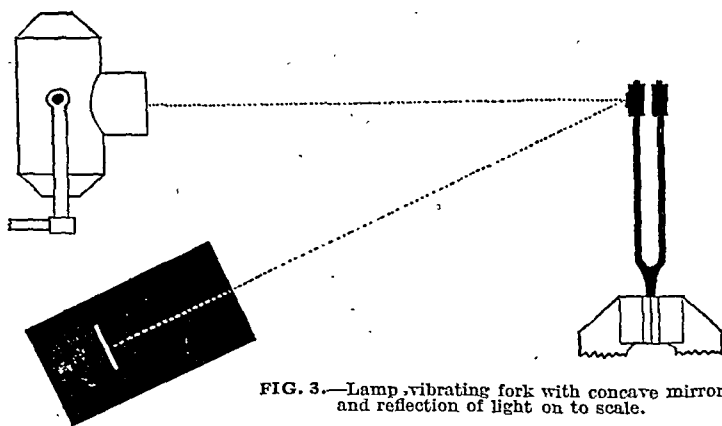


FIG. 3.—Lamp, vibrating fork with concave mirror and reflection of light on to scale.

given to the nearest whole number, and other numbers can be interpolated without any considerable degree of error.

Loss of hearing in—		Percentage of hearing-power:
Half-amplitude times.	Decibels.	
$\frac{1}{4}$	0.75	83-84
$\frac{1}{2}$	1.5	71
$\frac{3}{4}$	3.0	50
1	6.0	25
$1\frac{1}{4}$	9.0	12-13
$1\frac{1}{2}$	12.0	6
$1\frac{3}{4}$	15.0	3
2	18.0	2
$2\frac{1}{4}$	21.0	1

Determination of half-amplitude-time.—For forks ranging from 16 to 1024 cycles per second the diminution in amplitude to one-half may be observed by means of the microscope, but also by my simple optical method. The measurement is facilitated by the use of my "converging line gauge."

For the optical reflection method, a small concave

suggest that the counter-weighting was inaccurately balanced.

For the converging line gauge, two lines meeting at a point are ruled on the cardboard and these are

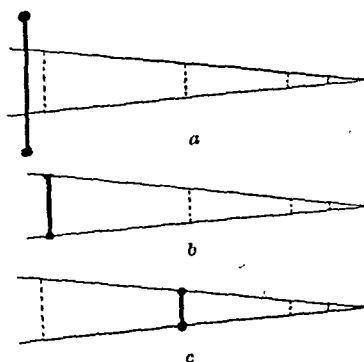


FIG. 4.—Converging Line Gauge.—(a) Vertical luminous line before start of counting seconds. (b) The same when starting the count. (c) The same when stopping the count, i.e., at half-amplitude.

crossed by vertical ones, say, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, and 1 in. in length. The board is placed so that the vertical luminous line lies over one of the longer lines on the gauge, say, the one measuring 1 in. (Fig. 4b); then the stop-watch is started, and, when the line has diminished to $\frac{1}{4}$ in. exactly (measuring by the centre of the rounded "knob" at each end) the board having been moved along until the bright line falls on the $\frac{1}{2}$ in. line, the watch is stopped and thus the "half-amplitude-time" is ascertained. (Fig. 4c). Large amplitudes should be avoided as the law of isochronous vibration applies strictly only to small ones. It is well to repeat the process several times and take the average, using, when possible, lines of different length (say 1 in. to $\frac{1}{4}$ in. and $\frac{1}{2}$ in. to $\frac{1}{4}$ in.).

For the highest pitched forks, 2048 and 4096, another method is required. The observer stands with his ear at say, 10 feet, or the furthest distance at which the sound can be distinctly heard, from the vibrating fork and then "sidles" towards it, keeping the loudness at the same degree till he is 5 feet or half the original distance from it. The number of seconds required for this gives the half-amplitude-time, as described and proved in 1929.⁵ This "sidling" method is inapplicable to low-pitched tuning-forks, as they cannot be heard at a sufficiently great distance, but it can be used for 512 and 1024 which, along with 2048, are the most important tones for the understanding of speech. This experiment should be made in conditions as nearly as possible approaching to the open air.

Apart from other considerations, I venture to believe that the above method of measuring loss of hearing in decibels will meet modern requirements without any very great difficulty.

I gratefully acknowledge much valuable guidance from Prof. E. N. Andrade, Mr. R. T. Beatty, D.Sc., and Mr. W. V. Mayneord, D.Sc.

WEIL'S DISEASE IN A SEWER-WORKER

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CASES of spirochaetosis ictero-haemorrhagica are being reported in considerable numbers on the continent and in the Far East, including Australia. In this country several series have recently been published which suggest that the disease is not so rare as has hitherto been believed and that it is indeed not uncommon in people who work in wet, rat-infested surroundings. The most recent are those of Davidson and his co-workers,¹ who described 19 cases from Aberdeen, chiefly among fish-handlers, and Fairley,² who described 10 which had occurred among sewer-workers in London within twelve years. Alston³ later described further cases occurring in London sewer-workers and reported the isolation of *L. ictero-haemorrhagiae* from slime in London sewers. Swan and McKeon⁴ noted a hitherto unsuspected source of infection in certain coal-mines in Northumberland and Durham, and recorded 12 cases in miners. In addition, single cases have been described by Willoughby and Shera⁵ in a girl, the cause of the condition not being recognised, by Wolstencroft⁶ in a canal-worker in Hertfordshire, and by Halsted⁷ in a sewer-worker in London. Quite recently

Alston and Brown⁸ have discussed the occupational incidence in this country and have suggested the possibility of prophylactic inoculation in those exposed to the risk of infection.

It seems desirable, therefore, to record sporadic cases as they occur and the following report is submitted because the clue to the real diagnosis was only given when the occupation of the patient was taken into consideration.

A sewerman, aged 44, working in London, came to the out-patients' department at St. Bartholomew's Hospital on May 21st, 1935, complaining of jaundice. On the 13th there had been a sudden onset of pains in the legs, the back, the shoulders, and the head. He felt ill and was slightly feverish, and a small herpetic patch appeared on the lip. He remained in bed and two days later he became jaundiced; the urine was dark and the motions pale. Next day the jaundice increased but the pains and general symptoms were less, and from that time he gradually improved. He was sent to hospital for advice on the eighth day of the disease.

He was found to be moderately jaundiced, there was herpes on the lower lip, and the liver was just palpable but not tender. No other abnormality was discovered. The urine contained a moderate quantity of bile pigment but no bile salts. At no time during the illness had there been any haemorrhage or petechiae, and in fact he does not appear to have been very ill. The only features distinguishing this from an ordinary case of catarrhal jaundice were the sudden onset with pains and fever which had been regarded as suggestive of influenza. Nevertheless in view of the occupation a tentative diagnosis of Weil's disease was made and the patient was admitted for investigation. At that time he was afebrile, with the bradycardia commonly found in cases of jaundice. The Wassermann reaction was negative and the van den Bergh test gave a direct positive result and an indirect reading of eight units of bilirubin. The blood count showed: red cells, 3,900,000 per c.mm.; white cells, 6600 per c.mm.; haemoglobin, 90 per cent.; differential count normal.

The serum was submitted to Major H. C. Brown, of the Wellcome Bureau, who reported on May 24th that there was agglutination of *Leptospira ictero-haemorrhagiae* to a maximum titre of 1 in 1000. The adhesion test was also positive. The urine was repeatedly examined by Dr. L. P. Garrod who was unable to find any leptospirae on May 23rd, but who found typical organisms on May 29th and 30th. On June 3rd considerable numbers of motionless leptospirae were reported; on June 7th there were numerous leptospirae; on June 13th there were small numbers of actively motile leptospirae; and on June 24th no organisms could be detected. It would appear that these organisms are much more readily demonstrated in an alkaline urine, and accordingly the patient was put on sufficient doses of potassium citrate from the time of his admission.

Dr. Garrod also inoculated several guinea-pigs with samples of blood and urinary deposit on May 29th and these died on June 7th with typical Weil's disease, the organisms being demonstrated in large numbers in the liver.

The subsequent clinical course was uneventful. The jaundice had completely disappeared by the middle of June and the patient was kept in hospital until the urine should become clear of organisms. He was discharged completely recovered on June 26th. With the exception of the potassium citrate already mentioned no medicinal or other treatment was given.

The result of the pathological tests proves beyond doubt that the patient was suffering from Weil's disease, yet the clinical features of the condition were such that a diagnosis of catarrhal jaundice would have appeared justifiable if a clue had not been given by the consideration of the occupation of the patient. This illustrates the value in appropriate cases of the special methods of investigation which are now at our disposal, and it emphasises the fact that jaundice of doubtful origin occurring in a patient who might have come in contact with material infected by rats

⁵ Dundas-Grant: Jour. Laryng. and Otol., 1929, xlv., 380.

should be submitted to examination by these methods. The technique of the agglutination and adhesion tests has been recently described by Brown,⁹ who states that a positive agglutination may be found on the sixth day of the disease and that, with the adhesion test, the result is certainly well marked at the end of the second week and possibly earlier. In the present case the agglutination test was positive to a high titre and the adhesion test was also positive on the ninth day of the disease. A further interesting point about the case was the comparative ease with which the organisms could be demonstrated in a centrifuged deposit after the urine had been made alkaline.

A question arose as to when it would be safe for the patient to be allowed to leave hospital. Comparatively little is yet known of the infectivity of the disease amongst humans, but the patient was kept in hospital until the urine was reported as being free from organisms. This subject has been considered by Cotter and Savers,¹⁰ who conclude that carriers are probably not important in spreading the disease.

I wish to thank Major Brown of the Wellcome Bureau for his reports upon serological tests in this case.

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LEPTOSPIRAL INFECTION FROM A STREAM

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INFECTION with *Leptospira ictero-hæmorrhagiae* is now regarded as a possible diagnosis in any case of acute febrile disease associated with jaundice. Several writers have reported clinical and laboratory observations on the disorder. Among them Alston^{1,2} has recently recorded important facts concerning the infection in sewer-workers in London, and the close association of the disease with rats is now firmly established. Water, slime, &c., to which rats have access, may be found to be infected with the leptospira, and probably certain colonies of rats are a source of constant danger in this respect. There is no definite knowledge concerning the extent of leptospiral infection or carriers in the rat population, but it must be regarded as an important aspect of the "rat problem." Alston brings evidence to show that human infection may be obtained by inhalation of infected droplets of slime or by way of the alimentary tract through the drinking of contaminated water. The possibility of the germ entering the body through skin abrasions has also been considered by Alston.

Laboratory methods in the diagnosis of the disease have been elaborated during the past few years

and now there are available definite criteria whereby the diagnosis can be confirmed. Doubtless, as in most bacterial diseases of man, there is a wide clinical range in the degree of leptospiral infection. Possibly mild infection may not be recognised. In fact Alston has given evidence, based on agglutination tests, that this is so among a certain number of sewer-workers. On the other hand, overwhelming infection with profound toxæmia and jaundice may render the disease rapidly fatal. Protective antibodies and agglutinins have been demonstrated in the blood-serum of recovered cases. In regard to the earliest recognition of specific agglutinins in the blood the data seem to be at present insufficient and but in one of Alston's cases a positive serum commencement of clinical infection. Agglutinins probably remain in the circulating blood for a long time, hence it may be possible to utilise serum in recovered cases in the treatment of the active disease in others.

The principal object of this paper is to record a case of severe infection by *L. ictero-hæmorrhagiae* in a young man who had almost certainly swallowed infected water whilst bathing in a stream.

The patient, aged 20, had had no previous illness. During August, 1935, he had spent a camping holiday on a farm and bathed several times in an adjacent stream. He thought he had swallowed some of the water on one occasion. There were many rats in the immediate vicinity. His illness began when he returned home.

A week before admission to hospital he was taken suddenly ill with headache, vomiting, and fever. Temperature 103° F. Two days later jaundice developed and became progressively worse. Albuminuria and passage of blood in the stools occurred within the next two days. The fever began to decline but the jaundice continued and became deeper. No vomiting of blood and no hæmaturia. On admission to hospital on August 21st he appeared gravely ill but quite clear mentally, although at intervals he was very drowsy. There was intense icterus and conjunctival hæmorrhages were visible. Tongue furred but moist. Small hæmorrhagic points on the gums and visceral mucosa. Temperature 101°; pulse-rate, 100; respirations, 20. There was no diarrhoea but one or two pale, loose stools were evacuated daily. The abdomen was slightly distended but not tender. The liver was palpable two inches below the costal margin. The spleen was just palpable. There were petechial hæmorrhages on the back. The urine contained a cloud of albumin and much bile pigment but no blood nor casts. Intermittent vomiting occurred. Blood count showed: red blood-cells, 4,960,000; white blood-cells, 12,000 (polymorphonuclears 78 per cent., lymphocytes 20 per cent., eosinophils 2 per cent.).

In view of the history and clinical picture a diagnosis of Weil's disease was made.

Treatment was chiefly symptomatic. He received six pints of plain fluids daily and liberal quantities of glucose. Intramuscular calcium gluconate was given. Arsenical preparations were withheld in view of the probable severe hepatic damage. The dehydration and severe toxæmia showed much improvement forty-eight hours after admission but the jaundice remained extreme. There was no pruritus. His temperature settled to a normal level and the pulse-rate fell to 60. A few days later the pulse reached a minimum of 50 but returned to 70 on recovery. On August 24th (ten days from the onset) the blood showed a positive biphase van den Bergh test. The urine contained a number of leucocytes and a few hyalogramular casts. No leptospira were seen in examination by dark-ground illumination. Cultural examination of blood was negative, and animal inoculation of the centrifuged deposit of urine gave a negative result.

The patient's progress was very satisfactory, and one week after admission he appeared to be out of danger. The cardiac sounds were better and no further hæmorrhages appeared. The jaundice, however, remained very

¹ Alston, J. M.: THE LANCET, 1935, i., 806.

² Alston, J. M., and Brown, H. C.: Brit. Med. Jour., 1935, ii., 339.

marked; it was, in fact, still detectable four weeks later. The liver diminished to the normal size. The spleen became impalpable. There was at no time any glandular enlargements. In the early stages his tendon reflexes were diminished but neurological examination later gave normal findings. There were no ophthalmoscopic changes.

Three weeks after the onset of the illness Dr. Alston carried out tests with the patient's blood-serum and found that the serum agglutinated *L. ictero-haemorrhagiae* in dilutions up to 1:30,000, thus confirming the clinical diagnosis of leptospiral jaundice. He also, at the same time, examined a specimen of urine but was unable to demonstrate therein any leptospira. It is, however, probable that if daily specimens could have been examined one in the early stage of the disease the infecting organism and id may have been found to be present. The patient finally diffide a complete recovery and is now well.

Clinically this case closely resembles those described as typical of the disease. Intense and rapid toxæmia with high fever, passing on to a deep icterus of obstructive type, and mucosal hæmorrhage, associated with polymorphonuclear leucocytosis, can be regarded as characteristic. Early diagnosis is very desirable in view of possible cross-infection in a ward. Severe cases of acute catarrhal jaundice may bear a superficial resemblance, and where the distinction is doubtful a blood count is helpful, inasmuch as in the catarrhal jaundice there is a relative or absolute lymphocytic response, in contrast to the polymorphonuclear response in true leptospiral infection. In Alston's cases the total leucocytes ranged from 15,000 to 20,000 per c.mm. The danger of rapid hepatic and renal failure is apparent in leptospiral jaundice, and it appears reasonable to attempt to combat this by an adequate and ample supply of glucose, by the intravenous route if necessary. The severe vomiting, so often seen in the disease, adds an extra danger to the patient by way of dehydration and further visceral impairment. The very high blood-urea reported in some cases is interesting in this respect. It is hoped that these general measures in treatment, combined with the possible use of blood or serum from recovered cases, will lower the mortality-rate of this potentially serious disease. In the case here recorded it must be granted that the patient was fortunate in possessing such a remarkable power of producing antibodies to the leptospira. As above stated, he developed an agglutination titre of 1:30,000.

ONCHOCERCIASIS IN ENGLAND

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ONCHOCERCIASIS a disease caused by a species of filaria, is endemic in some tropical regions of Central America and West Africa, but no sporadic cases have hitherto been described in this country. The development of rapid transport of cargoes between warm and temperate lands may lead, however, to the occurrence of isolated cases in the temperate zone.

In August, 1933, a man, aged 62, was admitted to Mill Road Infirmary, Liverpool, suffering from hydrocele. A scrotal swelling had been present for five years, but during the past six months discomfort had been experienced owing to the rapid increase in the size of the hydrocele. Orchidectomy was performed by the late Mr. C. O. Davies and some cystic fibrous tissue was removed, and routine sections of this fibrous tissue showed the presence of a microfilaria 240 μ by 7 μ . The larva was sheathless and

the nuclei did not extend to the tip of the tail, the most distal nuclei of the tail being oval in shape. Filaria were not found in the blood, nor was there any eosinophilia, and a diagnosis of onchocerciasis was therefore made.

Three days after the operation there was swelling of the scrotum with cedema of the wound; it was thought that this might have been due to the larva, but the cedema rapidly subsided and the patient was discharged. The patient was seen later and the scar was normal. According to Sharp¹ hydroceles due to onchocerciasis are not very amenable to surgical treatment as they are apt to result in prolonged suppuration, but in this case the wound healed by first intention.

The patient was closely questioned, but he insisted that he had lived all his life in this country and had, in fact, never left Liverpool; the infection must therefore have been contracted in Liverpool. According to Strong² the human carrier constitutes the important means of transporting onchocerciasis to distant localities, but the infected "black-fly" (simulium) is the means of transmission of the disease from man to man in regions where it is endemic. It seems likely, however, that this patient, who was a cotton porter, working at the docks, was bitten by an infected black-fly brought to this country on a cargo vessel. It has been estimated by Bequaert³ that the biting black-fly, the female, lives for several weeks, although it was difficult to keep them alive in captivity for more than a few days.

If this theory of infection is correct this case is an exception to Strong's rule; but another possibility must be considered. There are several species of black-fly to be found in this country, and they have been described by Edwards,³ though it is not known if they are capable of acting as vectors. As far as is known there are no infected black-fly in this country.

This question has arisen in the United States of America; Johnstone and Larsen⁴ have pointed out that onchocerciasis has a northward drift in America, and that the possibility of the simuliids in the United States acting as vectors of the disease should be investigated. The situation of the lesion pointed to the importation of a species of black-fly from West Africa, as the American fly usually attacks the head, and the scalp is the common site of the nodule; Sharp¹ described several cases of hydrocele in his African series, so that probably the West African species, *S. damnosum*, was responsible for the infection in Liverpool.

I am indebted to Dr. W. M. Frazer, medical officer of health for Liverpool, for permission to publish this case.

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LONDON JEWISH HOSPITAL.—An appeal for £60,000 has been launched for this institution with the approval of King Edward's Hospital Fund. It was founded some fifteen years ago as an out-patients' department and is now a general hospital with 100 beds. Over 28 per cent. of the patients are not of the Jewish faith. A new nurses' home is a necessity as the present arrangements for their housing, recreation, and instruction are inadequate. A new home will release wards, which at present are being used as cubicles for the nurses, for in-patients of whom there is a long waiting-list.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF EPIDEMIOLOGY

IN his presidential address to this section on Oct. 25th Surgeon-Captain S. F. DUDLEY, R.N., considered the

Biological Approach to the Study of Epidemiology

Epidemiology, he said, can be studied with advantage as that branch of academic biology which deals with the physiological reactions of parasitic and host groups of organisms to each other. After paying a tribute to the late Theobald Smith as one of the greatest investigators of host-parasite relationships which are the foundation on which scientific epidemiology is built, Dr. Dudley stated that "natural selection" was the fundamental theory in biology and if the principle was accepted with all its implications then all biological hypotheses, including speculations on the cause of epidemiological phenomena, must harmonise with the principle of natural selection or be discarded as false. Immunity or resistance to parasitic infection was so variable among members of the same race or species that immunity characters must be represented by many genes in the hereditary mechanism. Insuperable difficulties were often encountered when attempts were made to distinguish inherited or natural immunity from acquired immunity. These difficulties were not rendered any easier when it was realised that immunisability, the potentiality of acquiring immunity, and the durability or permanence of immunity, were also hereditary characters which could be augmented by experience, that is by contact with specific bacteria or their products. In fact the difficulty of deciding the relative importance of nature and nurture was as great to the immunologist as to the eugenicist and social worker. He illustrated these points with the supposed racial immunity of the negro to diphtheria in Africa, where clinical diphtheria is rarely seen and the Schick immunity very high; whereas the negro in the United States exhibits little difference from the European as regards Schick immunity and diphtheria mortality.

Modern work on gene-mutation mutation rates and X ray mutations suggests to Dr. Dudley that parasitic variability is a more frequent cause of epidemics and variations in the clinical pictures of disease than most bacteriologists have hitherto been prepared to admit. The multitude of types and varieties into which all bacterial species are now split probably, he said, arose comparatively recently as mutants of a common ancestor; it was likely that many of these parasitic mutants cropped up over and over again and were selected for survival at the moment when the conditions were propitious for their dissemination throughout the host herd. In illustration of this he described some peculiar changes in the relative prevalence of the variants of diphtheria bacilli, virulent and avirulent, "mitis," "intermediate," and "gravis," at different times and places. He also gave examples showing how under apparently identical conditions the carrier rate from meningococci could vary from 5 to 50 per cent. In contrast to the sexual metazoa, Dr. Dudley continued, the doctrine that acquired characters are never inherited is not strictly true when applied to unicellular organisms, because new inheritable characters can be impressed on certain protozoa

and bacteria by their environment. Trypanosomes can be trained to tolerate therapeutic drugs in doses that, previous to their education, would have been immediately fatal, and the trypanosome will retain this drug-resistant character even after passage through the tsetse fly. Parasites, he said, are highly specialised in one character, namely, "host specificity," that is, with numerous exceptions each host animal has its own parasitic flora and fauna adapted to that species and no other. Moreover parasites are only adapted to living hosts and cannot compete with the putrefactive and saprophytic organisms which invade their host after death. Therefore the popular fear of getting disease from animals and corpses has little foundation in fact.

Nevertheless, it is not improbable that certain outbreaks of disease may be due to aberrant parasites who have strayed out of their normal hosts in an endeavour to adapt themselves to a new habitat. Disease and epidemics are not the striking phenomena in wild untouched nature that they are among man and his domestic animals and plants. In wild nature the organisms are in equilibrium with each other and their environment; which means that the average number of each species is more or less constant. The environment is supporting the maximum number of each species which is possible under the prevailing conditions. The natural fecundity of the species is balanced against the pressure of the environment and there are no vacant places left for the further multiplication of the species. When an animal is increasing in numbers there must be vacant places awaiting occupation in its environment, the struggle for existence is less severe and natural selection less active so that under such circumstances unfit members of the species may be able to escape elimination. There are still many vacant places in man's environment, and in consequence there are still as many left for his parasites. Man has to compete with no other species but his own, and his parasites whose destiny is of course bound up in that of their human hosts. This, said Dr. Dudley, is one reason why man can still multiply and at the same time carry a heavier handicap of disease than any other species; but the chief reason why disease should be the special prerogative of *Homo sapiens* is that he is for ever altering and interfering with his own (and therefore his parasites') environment, and the latter never have time to adapt themselves to one environment before they find themselves in another.

SECTION OF PHYSICAL MEDICINE

AT a meeting of this section on Oct. 25th Dr. C. B. HEALD read a presidential address entitled

Electrotherapy 1910-35

As an illustration of the great development of electrotherapy in the present reign, he showed the inventory of apparatus—four pieces—at the Royal Free Hospital in 1910, the much longer list of 1920, and the imposing equipment of the present day. The number of treatments given every year had risen from 10,000 to 80,000. Dealing with the various forms of therapeutic electric current, he showed oscillographic tracings illustrating the improvement in the type of impulse from the early faradic coils to the latest developments of the rhythmic myotroph. He devoted a large part of his address to the various methods of heat treatment which had been introduced during the

Dr. Robert Hellig M.D.

E. J. A. Medical College

reign for combating shock, inducing sweating, or artificially raising the temperature of the body. The earliest device was a radiant heat shock cradle, containing twelve carbon filament bulbs. This had given fairly good results but improvements had been made by using elements which generated far less light and more heat. He had lately made experiments to compare the heat generated by the various types of apparatus and the pyrexia produced. The apparatus investigated had been the old type radiant heat cradle, the London County Council model shock cradle, the infra-red tunnel of the British Red Cross Society, and an electric blanket and short-wave apparatus of two types, the inductotherm and Wilde's pyretic bath. The British Red Cross Society used a heating element consisting of a self-insulated wire in a quartz tube. The infra-red rays were greater and the light less than in the old cradle and the clinical results were better; in particular this cradle relieved periarticular muscular spasm.

The effects of heat treatment differed widely according to the mixture of the rays, the site of entry, the intensity of the beam, and its duration. Tests showed that once the heat-regulating mechanism of the body was altered, either by a kind of breakdown or a readjustment on a new plane, very little energy was required to maintain the general body temperature above normal. Treatment with a radiant heat bath should not be started until at least two hours after a light fluid meal, or nausea and other distressing symptoms might occur. The patient's toleration and comfort were enhanced if he drank large quantities of glucose and saline fluid flavoured with lemon. The concentration of saline must be 0.2 per cent., which was not a pleasant drink but which was absolutely essential to replace the salt lost in excessive sweating.

The conditions of the experiments had been made as standard as possible. When the L.C.C. cradle had first been tested at the Royal Free Hospital with a dummy on the bed the temperature had risen rapidly to a very high level and large differences of temperature were observable on the surface. On the other hand, when a patient was in the bath the temperature on the top of the blanket became stable at 152° F. and the skin temperature under the blanket became stable at 116° F. This illustrated the powerful thermostatic effect of the patient. A radiant heat bath of this type could rapidly produce sweating and rise of temperature with full power, but so intensive a treatment could not be good for shock or safe for prolonged pyrexia. When six lamps were used instead of twelve the temperature, pulse-rate, and blood pressure were not affected while the skin temperature was slightly raised. The electrical blanket provided an efficient and not uncomfortable method of transferring heat energy to the patient.

Dr. Heald referred to the lecture delivered by Dr. C. A. Neymann before the Royal Society of Medicine in the present year, in which the American worker pointed out the advantages of securing hyperpyrexia by high-frequency current: ordinary diathermy, short-wave diathermy, and inductothermy. Dr. Heald showed a chart of a typical response to diathermy from both hands to both feet; temperature, pulse-rate, and respiration-rate were all raised and sweating was profuse. He had included in his experiments a test of short-wave apparatus and inductothermy and had, like Dr. Neymann, concluded that inductothermy was probably the best of these methods. It differed in that the current was not passed directly through the patient but through a

coil of insulated wire laid upon the pack in which he was wrapped: usually an airtight bag with a zip fastener. The generator was said to have an output of 950 watts, and the very rapid expansion and contraction of the electric field in the wire caused eddy currents within the conducting parts of the body—the fluids, muscles, and nerves. A feature of inductothermy treatment was that the feeling of warmth it produced remained for several hours after treatment was discontinued. On the whole, the electrical methods were more comfortable than the application of rays.

Dr. Heald commented on the difference between the American and the English reports on the white cell counts during treatment. While the white cells were generally reported by English workers to fall, the Americans showed a great increase. It was possible that the Americans had not allowed, as he had, for dehydration. The count was an invaluable control, for a rapid fall was a signal to stop treatment.

At the close of his address, Dr. Heald gave a demonstration in support of his belief that infra-red rays actually penetrated the patient's body and exerted an effect upon its constituents. A photo-electric cell was connected to a Cossor Robertson electrocardiograph of the latest type, and the sensitive bridge of the cell was completely covered with a substantial piece of meat; but when infra-red rays were directed at the meat the oscillograph showed a vigorous response. It showed a similar response when Dr. Heald irradiated the meat with a Kromayer lamp fitted with a filter which cut out all visible rays. He took this result to indicate that, besides the ultra-violet rays which it is constructed to emit, the Kromayer lamp also emits an isolated band of infra-red rays and that its therapeutic effects may be due in considerable measure to this band—a sharply defined and comparatively narrow band being known to have a greater effect than the same band grading off into higher and lower wave-lengths.

MEDICAL SOCIETY OF LONDON

At a meeting of this society on Oct. 28th, with Prof. G. E. GASK, the president, in the chair, a discussion on

Electrical Injuries

was opened by Dr. MACDONALD CRITCHLEY. In each year, he said, the number of fatalities from electrocution in England and Wales was 50 or 60, but there must also be a very large number of minor and major injuries both in industry and in the home. In Germany the number of deaths was higher—probably about 400 annually—and in the United States it was 700 to 800. In this country the consumption of electricity was four times what it was in 1912, but the mortality in 1934 was lower. Several factors determined the type and severity of the accident, and the first was voltage. In general terms, the higher the voltage the greater the danger; but 45 volts had been known to kill a person, and 60 certainly would do so. Deaths from contact with the ordinary electric lighting main were very common; on the other hand, cases were on record in which people had touched a main and received 132,000 volts and still survived. The next factor was amperage: it was the amount of current passing through the person which was important rather than the pressure; 20 to 30 amperes was an unpleasant strength, 80 to 90 was dangerous. The type of

current was also important; volt for volt, the alternating current was much more dangerous than the direct, and that fact was borne out by the Home Office figures, particularly up to a voltage of 250. The next important factor was the resistance of the tissues. Skin, especially when dry, was highly resistant to the electric current; sweating reduced its resistance 12 times and immersion in water 25 times. The best conductor of electricity in the human economy was the cerebro-spinal fluid, and it was closely followed by the blood, the muscles, and the liver. The nervous system was resistant; it had been found that the sciatic nerve had eight times the resistance of Atlantic cable. A further important factor was the duration of the current's passage; momentary contact with a heavy charge might be innocuous, but the longer the duration the more the tissue resistance dropped.

A person receiving a strong electric shock almost always experienced highly unpleasant pain; survivors of such shock described an agonising pain throughout the body. Many complained of deafness and tinnitus if the shock continued; often they were completely blind, and some described actual hallucinations—balls of fire, a brilliant setting sun, balls or flashes of light, and moons. Some spoke of a feeling of a shrinkage of the body, and a loss of time-sense, so that a contact of five seconds seemed like ten minutes. In some cases there seemed to have been a notable absence of pain, though other sensations were felt. Unconsciousness did not necessarily follow, but might do so. It might result immediately from pain, or the person might fall to the ground soon after receiving the shock and remain unconscious for minutes, hours, or a day or so; during this period there might be motor agitation, convulsion, twitching, tremor, and a sense of increased intracranial pressure. The tension of the cerebro-spinal fluid might be raised, and it might contain blood; some stated that its temperature was raised. As in concussion injuries, there might be retrograde amnesia—e.g., in the case of a boy who climbed up a pylon, made contact, fell to the ground, and, when he reached home, asked for his midday meal, although he had already had both dinner and tea. Another type of unconsciousness was that which came on after an interval of, perhaps, some hours; this was due to increasing cerebral oedema.

Electric burns were abnormally deep; secondly, they tended to spread in the first few days after the shock, and this might be dangerous because of the liability to reactionary hæmorrhage, especially as one effect of the shock was to make the blood-vessels of the locality unusually friable. In Vienna this danger was so well recognised that means of dealing with sudden hæmorrhages from this cause were always kept ready in the hospitals. In comparison with a burn from an ordinary fire, the surrounding erythema was much more limited. One authority stated that electric burns were painless, but Dr. Critchley did not agree, though the explanation that the pain might be due to the burning of the clothing was a possible one. Another statement which he did not accept was that electric burns were sterile. They healed rapidly, and the resultant scar was a good one, mostly free of contractures, it was said; but he had seen bad deformities follow. The points at which the current entered and left the body were usually indicated by rounded greyish areas, which were painless. The patients showed a peculiar metalisation of the skin, an appearance much resembling morning frost on a pane of glass, due to

minute depositions of copper in the dermis. In severe cases the burns might amount to gigantic tissue necrosis; indeed, a whole limb might be almost amputated by the electric current.

Bony injuries caused by electricity were important though less common than other forms. When a current passed through a long bone it produced a longitudinal fracture, without fragmentation, but the apposition was so good and the fissure so narrow, that it was not recognised, even by radiography. As pain persisted, another radiogram was taken, and by this time the parts fractured were not in such close apposition, and osteomyelitis, and perhaps sequestration, followed. A second type was a fracture or fracture-dislocation due to direct muscle violence. A third was injury of the skull; this was specially apt to occur when the skull formed one of the points of contact. In one such case a man was picked up unconscious and all that was seen on his head was a slight pimply swelling, with a mark on the sole of the foot where the current had apparently left the body. The "pimple" subsequently developed and formed an extensive ulcer, which was sharply punched out, with much thinning of the underlying skull.

The remote effects of electric shock were rarities but often missed. They were either ocular or neurological. The ocular were two only: optic atrophy and cataract. The neurological were much more complex, and might consist of organic disease of the spinal cord or brain. It must also be realised that organic neurological diseases could be precipitated by electric shock—e.g., disseminated sclerosis, parkinsonism, cerebral tumour, myasthenia gravis. Cerebral complications were not very common; they took the form of focal lesions—i.e., hæmorrhages, softenings, or abscesses. There were records of cases in which the onset of epilepsy was ascribed to an electric shock. The post-concussional syndrome was also seen in these cases, especially those in which the head formed the point of electrical contact. Such a patient might draw compensation for years because of giddiness, headache, and the like. Much more characteristic were the complications in the spinal cord. Here the picture was like that of amyotrophic lateral sclerosis; there was a wasting of the muscles of the hand, which spread up the arm, and then developed in the other hand; later the legs became affected, and there was pyramidal involvement, with double extensor plantar responses. There seemed to be a close association between the electric shock and the onset of spinal atrophy, and the term "spinal atrophic palsy" was used in this connexion. Peripheral nerve lesions were uncommon after shock, but they did occur; there might be palsy of either median or ulnar nerve.

Psychological disorders often started after severe electrocution; or they might be modified—and even cured—by the shock. Psychoses had been relieved, and in some cases cured, by electric shock, just as by lightning stroke; a boy in an asylum suffering from dementia præcox climbed up a pylon and after recovering from the immediate shock was mentally much better. Hysteria was very common after electric shock, as after lightning. A striking case was that of a man in Berlin who fell on to an electric line so that his arm came into contact with the live rail. His arm was paralysed and apparently insensible to touch, and it remained inert at his side for a long time. But later it was clearly proved that there was no current in the rail at the time of the fall.

The actual cause of death remained a problem. One theory was that it resulted from ventricular

fibrillation; another that it was due to medullary inhibition of respiration. Dr. Critchley thought it probable that both were correct. Books on ambulance work still insisted that if necessary artificial respiration should be continued for hours, though it was established that the brain cells could not revive if deprived of circulation for 20 to 30 minutes. But as respiration and circulation, though very feeble and not detectable, might still be carried on, it was well not to alter the ambulance instructions. As regards prevention, Dr. Critchley paid a tribute to the adequacy and thoroughness of the Home Office Regulations, and the energy with which failure to control industrial apparatus was punished. This control, however, did not extend to home accidents, and there the need seemed to be proper education, especially about the risks of worn flex for ironing or lighting.

Mr. ERIC PEARCE GOULD said that for judicial electrocution at Sing Sing Prison a current of 22,000 volts was used, and it was kept on until the flesh began to burn, a matter of some 17 seconds. If the stethoscope showed that the heart had not ceased to beat, the doctor signalled for a second discharge, but this was very rarely necessary. He gathered that there was a good deal of pulping of the brain immediately subjacent to the head injury. He had seen some cases of electrically caused injury on the Southern Railway in the old days. It was a different story now with the third conductor rail, because the voltage there was only 650 of direct current. Of 2274 accidents on that railway in 1934, the total number of electrical injuries was 38, and only two of these were fatal, both the victims being children (aged 6 and 12) who had strayed on to the line. The average period of incapacity following the injuries was 7 weeks 2 days. That surprised him, because among those who had sustained electrical accidents he had noted a definite distaste to resume the work, from fear of a recurrence of the experience. His impression was that burns caused by electricity were not as painful as those caused in other ways. Some healed with scars which would be recognised as those following burns, but in some cases, despite the extent of the burn, there was surprisingly little scarring.

Mr. ZACHARY COPE related cases of severe lightning burns and electric shock which he had seen.—Commander T. N. D'ARCY described a case in which an electric shock from a main was carried along a stream of urine.—Mr. A. SIMPSON-SMITH gave a short description of legal electrocution carried out in Massachusetts, and Dr. CRITCHLEY briefly replied.

LIVERPOOL MEDICAL INSTITUTION

A MEETING of this institution held on Oct. 17th, with Dr. C. O. STALLYBRASS, the president, in the chair, was devoted to a discussion on

Coronary Thrombosis

Dr. E. WYN JONES described the coronary circulation as demonstrated by radiography. He laid emphasis on the age changes in the vessels and especially on the development of anastomotic channels with increasing age.

Dr. H. WALLACE JONES outlined the clinical aspects of coronary thrombosis. Only during the last few years, he said, had it been realised that most patients recover from the attack. The illness fell into two stages: (1) the initial anginal attack, and (2) the

evidence of myocardial infarction and damage. During the attack important features were pain, vomiting, air-swallowing, fall in blood pressure, and distant heart sounds. The subsequent signs included pericardial friction, congestive failure, pyrexia, leucocytosis, emboli, and abnormal rhythms. Atypical forms of the condition included the painless, ingravescient, and abdominal types.

Dr. E. NOBLE CHAMBERLAIN, speaking of the electrocardiographic changes, said that one of their most important features was frequent variation within a comparatively short period. Lack of knowledge meant that the treatment was not yet on a fully satisfactory basis. Morphine should be used in doses sufficient to relieve the pain, which often meant giving as much as 1 grain within two hours of the onset. The usual treatment of shock was indicated in cases where collapse was conspicuous, and if the fall of blood pressure was extreme adrenaline or ephedrine might be helpful. Digitalis should be reserved for cases in which definite signs of congestive heart failure develop a few days after the attack of coronary thrombosis, and those complicated by auricular fibrillation. Oxygen—preferably given in an oxygen tent—was useful in cases where cyanosis and dyspnoea were prominent. In the subsequent treatment the most important point was the restriction of undue mental or physical exertion, the treatment of the angina of effort which usually followed, and the enforcement of rest in cases where recurrent cardiac pain occurred without effort.

Prof. J. H. DIBLE described coronary thrombosis as the last act in the long drawn out drama of coronary atheroma—a disease which in some people affected the coronary arteries much more than others. By the time the disease had advanced to the stage of thrombosis the chronic ischaemia had usually led to a good deal of focal destruction of the myocardium which had a high oxygen-consumption and when actively contracting demanded 1-1½ litres of blood per minute. The thrombosis was followed by a cardiac infarct and a new set of conditions arose. The process of organisation began immediately, whilst pericarditis developed on the surface and mural thrombosis frequently in the interior of the ventricles. Both systemic and pulmonary emboli were possible consequences of the latter whilst autolytic softening of the infarct might occasionally result in cardiac rupture. When the organisation of the infarct was complete, it left a fibrous scar in the ventricular wall which might become the site of a cardiac aneurysm.

The PRESIDENT said he would add a word on how not to diagnose coronary thrombosis. Sudden death in a person not known to have suffered from coronary disease did not justify this diagnosis.

Prof. JOHN HAY spoke of the importance of the atypical manifestations. Correct diagnosis was necessary because prolonged treatment was advisable after even a minimal thrombosis. The usual symptoms of pain and collapse might be present but mild, or the pain might be absent or negligible, with some other feature dominating the picture—e.g., apprehension, much dyspnoea, congestive cardiac failure, a pathological rhythm, or symptoms suggesting an acute and serious abdominal lesion. The proportion of cases in which pain was absent was far higher than was generally appreciated.

Dr. I. HARRIS said it was risky to rely on electrocardiographic evidence alone, because often electrocardiograms suggested coronary thrombosis when no clinical evidence of it could be found. The condition

was a common complication of high blood pressure. With a high blood pressure the pressure in the coronary circulation ought to be enormously increased; and yet it was known that the factor which favours thrombosis is a slow and feeble circulation. This was a significant fact. Dr. Harris emphasised the importance of systolic pressure readings. The pressure was low after the attack, and a rise during convalescence was a favourable sign. A fall was always an indication for prompt action—e.g., putting the patient to bed and possibly administering cardiac tonics. He found strophanthin much more useful than digitalis in these cases. After the acute stage of coronary thrombosis was over graduated exercise was beneficial in suitable cases.

Dr. F. B. JULIAN said that as digitalis was likely to cause a rise of pressure in the coronary arteries, and a raised pressure was one of the factors in the production of coronary thrombosis, caution was perhaps called for in the use of digitalis in the senile type of auricular fibrillation.

Dr. R. C. WEBSTER referred to syphilis as an ætiological factor. He asked whether the clinical syndrome ascribed to coronary thrombosis might not occur, in the absence of actual thrombosis, in cases of defective coronary circulation.

MANCHESTER MEDICAL SOCIETY

At a meeting of this society on Oct. 2nd, Dr. R. G. GORDON, of Bath, read a paper on

Osteo-arthritis and its Concomitants

Osteo-arthritis, he said, is too often confused with other diseases included under the generic term of chronic rheumatism, and not enough thought is given to the treatment of the individual case. Osteo-arthritis should be distinguished from ossification of muscular, ligamentous, and fascial insertions. It is primarily a degenerative condition, exostoses being compensatory and secondary, and it occurs in joints whose blood-supply is deficient and which have been subject to previous disease, strain, or trauma. Essentially it is a degeneration in the central cartilage, leading to thinning, ribbing, and finally disappearance with exposure of underlying bone. The bony changes consist in formation of exostoses and eburnation of exposed parts; the capsule and ligaments are at first fibrosed but may eventually disappear leading to new muscular attachments.

Symptoms of osteo-arthritis are pain, stiffness, and limitation of movements with deformity in late stages. Pain is due to pressure on exposed bone and muscular spasm. Stiffness and limitation of movement are only occasionally due to exostoses and loose bodies, and generally due to fibrositis, muscle spasm, and fibrosis of the joint capsule. Deformity is due to changes in bony architecture and to new attachments of muscles pulling the bones out of position. Diagnosis can be confirmed only by radiography, but pain, stiffness, limitation of movement, arterial degeneration, and neighbouring fibrositis in an elderly patient should always arouse suspicion. Prognosis though eventually bad should not be too gloomy, since much can be done to stop or delay progress and to remove the concomitant fibrositis.

Treatment is general, local, and adjuvant. General treatment consists of measures to arrest cardiac, renal, and vascular degeneration, especially those which will dilate the capillary bed and promote elimination by skin, kidneys, and bowels. Local

treatment is directed to increasing circulatory efficiency of the joint, relieving pain, and reducing muscular spasm. Protein shock has had a vogue for this purpose, but physical methods especially heat applied to the joint are more useful. No trauma must be applied to the joint; therefore manipulation must be carried out with the greatest care and operation is applicable only to carefully selected cases. Splinting is often very useful, especially the walking calliper in hip and knee cases if the patient can be persuaded to tolerate it. Adjuvant treatment is chiefly directed to the accompanying fibrositis. In the elderly subjects of osteo-arthritis this will consist of the right kind of massage and eliminative methods, chiefly in the form of physical and hydro-therapy. Removal of septic foci will have only a secondary place since both the osteo-arthritis and fibrositis are chiefly due to metabolic changes consequent on vascular degeneration and faulty elimination. Diet in fibrositis and osteo-arthritis is not specific, but is of importance in so far as it may reduce obesity, prevent cardiorenal degeneration, or preserve the patient from metabolic disturbances due to indigestion.

ROYAL ACADEMY OF MEDICINE IN IRELAND

Dr. V. M. SYNGE gave a presidential address to the section of medicine at a meeting held on Oct. 11th, with Dr. A. R. PARSONS in the chair. His subject was

Tendencies in Present-day Medicine

The progress of medicine in the past, he said, is represented more accurately by a series of waves than by a straight line. We cannot tell whether present-day progress is nearing its crest or not, but we do know that the curve is still rising. During the past few decades pathology, bacteriology, biochemistry, and psychotherapy have in turn been to the fore, and we notice here a tendency to move from the more concrete to the less concrete. The mental equipment of the doctor has four elements:

- (a) Inherited and acquired mentality: disciplined thinking power, common sense, and free mental judgment.
- (b) Technical knowledge acquired as a medical student.
- (c) Knowledge gained by practical experience.
- (d) Absorption of new medical methods and discoveries.

His capacity for diagnosis, treatment, and prognosis may be expressed by $a+b+c+d$. As age advances b diminishes, c increases, a is constant, d varies greatly and depends in some measure upon a . Good secondary education is necessary if the value of a is to be maintained; b is tending to become of less practical value as the medical curriculum is lagging more and more behind modern medical knowledge. This is likely to continue as long as the dominant idea in the alteration of medical education is to add to the curriculum without at the same time eliminating out-of-date material. The value of d depends not only upon new discoveries but also upon their accessibility. Research has not produced as much fresh knowledge as it should have. Apparatus and equipment should not be considered of more importance than the researcher himself. Too much research work is done to order, and work done for the sake of publication is often of little value. Medical literature is now unwieldy. Indexes of medical literature are inadequate and not sufficiently international. In the patient's mind, said Dr. Synge, the idea of

magic is being transferred from the doctor to his instruments; but despite the deluge of quack medicines and pseudo-scientific advertisements the patient is gradually advancing in his medical outlook.

Dr. H. F. MOORE said that if facilities for investigation existed in Ireland it would be easy to regain the fame which the Irish medical school had held in the days of Stokes, Corrigan, and Graves. A scheme started by the Academy of Medicine had now been adopted by the authorities.

Dr. R. J. ROWLETTE spoke of a reference by the president to team-work. The word "team" could be applied in two different senses which it was important to distinguish. It had first been used for a group of three or four practitioners who had banded themselves together for commercial purposes in running a practice; they had different capacities—surgeon, physician, or other specialist—but they dealt with everything that came their way. On the other hand, the term was often applied to a group of practitioners, each with a separate line of approach, who could be assembled to deal with a particular case. Instead of the team being a fixed group, it was a group assembled for a particular occasion to deal with a particular problem. Such a group could be readily assembled in any university centre, and without such co-operation medicine would be much the poorer; but very little could be said in favour of the team in the narrow commercial sense.

Dr. E. T. FREEMAN referred to the pressure put on the medical profession to use various drugs when they had not even had an opportunity of trying them. A doctor was expected to buy a certain apparatus because his patients, having read newspaper advertisements, expected him to have it.

Dr. W. R. F. COLLIS maintained that Irishmen were really well fitted for research, but had hitherto lacked opportunities. Research was essentially a whole-time job, and there was a need for whole-time research clinicians.

Dr. G. C. DOCKERAY said that there was a tendency to send to the laboratory everything except the patient and the necessary information. He hoped that under the new research scheme technicians would be properly trained, and paid a salary in some degree commensurate with the work they did.

Dr. C. J. MCSWEENEY spoke of the rise of the preventive idea in medicine. Nowadays no child ought to develop diphtheria. Immunisation against scarlet fever was also possible, and other diseases were rapidly coming into the preventable group.

Dr. ALAN THOMPSON considered it unfortunate that the pathologist and the radiologist were so much out of touch with the material with which they had to deal. There was a great opening for the introduction of the pathologist to the hospital wards.

The PRESIDENT in his reply said he thought research laboratories produced relatively little of value in proportion to their number and to the amount of work done in them. Medical students, he believed, were obliged to learn too much anatomy and physiology; they should not be allowed to enter medical schools without some preliminary scientific knowledge. Chemistry and physics were taken so fast that they were not approached in a scientific spirit. A student's mind should be trained so as to enable him to take up facts which would come into force a few years after he was qualified. Medicine should be taught as a dynamic moving subject and not as one which did not change.

REVIEWS AND NOTICES OF BOOKS

A Century of Municipal Progress

1835-1935. Published under the auspices of the National Association of Local Government Officers by George Allen and Unwin, Ltd., London. 1935. Pp. 511. 21s.

"For the average English citizen," said Graham Wallas, "the possibility of health, of happiness, of progress towards the old Greek ideal of 'beautiful goodness' depends on his local government more than any other factor in his environment." Of this, however, the average citizen is unaware; he takes his local government for granted, and is far from realising that the story of how it came to be what it is and what it does for him is of fascinating interest. In this book, which is issued under the auspices of the National Association of Local Government Officers, the story is well told and deserves to be read by all who care for the promotion of good citizenship. The book is the work of seventeen writers, each an outstanding authority on the subject with which he deals: Sir George Newman writes on public health, Sir Josiah Stamp on municipal finance, Sir Frederick Kenyon on municipal museums and art galleries, Sir E. D. Simon on housing and civic planning, and Mr. Herbert Morrison on highways and transportation; and in a brilliant introductory chapter, "Before 1835," Prof. Elie Halévy shows how the English genius for local government found effective expression long before the Municipal Corporations Act was passed a century ago. Mr. L. Hill, general secretary of the N.A.L.G.O., contributes a valuable article on the municipal service, which presents

an enormous fund of information, not readily accessible elsewhere, on the conditions under which local government officers are recruited and do their work. In a book to which so many authors have contributed some duplication was perhaps unavoidable; the history of public health legislation from 1848 to 1875 is told both by Dr. J. L. Hammond and Sir George Newman and the *Times* joke about Chadwick's acting as a nursemaid to John Bull is quoted in both articles.

Sir George Newman's scholarly article is of special interest to medical readers. He surveys public health problems broadly and in relation to other advances in social amelioration, pointing out that what has been achieved in the last hundred years was based on the work of pioneers in the eighteenth century and even earlier. More might with advantage have been said of the later developments of preventive activity; for there is only the merest mention of the progress made in the last thirty years in maternity and child welfare—probably the best example that could have been given of the co-ordination of municipal and voluntary effort—and in the control of tuberculosis and venereal disease. Any space needed for this purpose could have been secured by curtailing the account of the national health insurance system, which has only a remote connexion with municipal progress.

The book leaves a profound impression on the reader of the range of responsibility now undertaken by the local authorities of this country. Modern advances in science lead to continual additions to their duties, and there is hardly a year in which some

new field of activity does not begin to be explored. It is not surprising that the old local government areas have become unsuited to the new needs, and that drastic readjustments of structure to function are widely regarded as necessary. Those who wish for authoritative guidance on these and other problems of local government—problems that directly affect the daily lives of all of us—cannot do better than study this important book.

No Mean City: A Story of the Glasgow Slums

By ALEXANDER MCARTHUR and H. KINGSLEY LONG. London: Longmans, Green and Co., Ltd. 1935. Pp. 324. 7s. 6d.

THIS book is based on the unpublished novels and notebooks of Mr. McArthur, an unemployed Scottish baker who was born in the poorer part of Glasgow and has lived there all his life. The material has been put into its present form by Mr. Kingsley Long, a London journalist. It covers the period from 1921 to 1930, and the authors believe they have drawn an unexaggerated picture of conditions in the tenements and of life amongst the gangster element of the worst of the slums. If the book is horrible, and it is, that is because the reality of extreme poverty and the a-morality which it engenders is itself horrible. The book may come as a shock to those who dislike plain speaking about the facts of slum life and would prefer to have the evil thing covered up and hidden out of sight, but it is only the realisation of what the slums are which will rouse public opinion to the pitch of getting rid of them; and this book is to be welcomed by all who care for the better housing of the people.

Forensic Chemistry and Scientific Criminal Investigation

Third edition. By A. LUCAS, O.B.E., F.I.C., formerly Director, Chemical Department, Egypt; Fellow of the Chemical Society; Member of the Society of Public Analysts; Member of the Medico-Legal Society. London: Edward Arnold and Co. 1935. Pp. 376. 18s.

It is refreshing after a surfeit of works on the chemistry of blood and urine to meet a book on legal chemistry, a subject of growing importance in the courts (see p. 1013). Mr. Lucas writes for the chemist who is concerned with the investigation of crime. The list of subjects covered in his pages varies from the familiar blood stains to the detection of counterfeit coins and of robbery from letters and parcels, and at first sight one would imagine that chemistry had very little to do with some of the topics mentioned. But the author, clearly a man of very wide practical experience, doubtless has good reasons for including all the material here collected though the minute detail with which certain simple operations are described, notably the mixing of plaster-of-Paris in the chapter dealing with foot-prints, will certainly weary some of his readers.

It is quite clear that, in addition to a knowledge of chemistry, anyone specialising in this kind of work would have to become a detective of no mean ability, and one shudders to think what would happen to innocent and guilty alike if the instructions were followed by a person who was less experienced in methods of detection than in methods of the laboratory. The work will prove valuable to anyone engaged in this special subject, and the more general student of chemistry will find much to interest him in its pages.

Gray's Anatomy

Twenty-sixth edition. Edited by T. B. JOHNSTON, M.B., Ch.B., Professor of Anatomy in University of London, Guy's Hospital Medical School. London: Longmans Green and Co., Ltd. 1935. Pp. 1516. 42s.

THE appearance of the new edition of "Gray" has been awaited with interest, because it was known that it would be written throughout in the new (British) terminology, and that certain changes would be incorporated in it. The volume now to hand is a magnificent achievement—a book which is not only profitable but pleasurable to read. The main changes introduced (after nomenclature) have to do with osteology, which section, it is announced, has been largely rewritten and rearranged in different types so that the value of the section for junior students might be increased and the modern method of teaching supported. It is disturbing to think that a great text-book should be swayed by pure utilitarianism, or should take account of the babblings of the uninformed, so that we turned with a little apprehension to the section concerned. Here we were at once reassured. The work has been done most carefully; if anything, the value of the description has been enhanced by the changes. We would like to see more stress laid on the sexual differences in ossification times, and none placed on the participation of the median cartilage in the growth in depth of the vomer, but beyond these small matters we found nothing which failed to please us. All concerned in the production of this work deserve congratulation.

Chirurgie de la tuberculose pulmonaire

By A. BERNOT, Médecin-directeur du Sanatorium des Fougerays à Châteaubriant; and H. FRECHAUD, Membre correspondant de la Société Nationale de Chirurgie. Paris: G. Doin et Cie. 1935. Pp. 589. Fr.120.

THE divergence of opinion that exists on the indications for and the technique of the various operations for pulmonary and pleural tuberculosis is well exemplified in this latest contribution from France. The ideal method for collapsing the lung by thoracoplasty has not yet been discovered: the search continues for the technique which will give the most efficient collapse with the lowest mortality. In this book the authors quote freely views of many authorities (chiefly French), and discuss all the possible combinations of the different methods of collapse therapy, without, however, having arrived at any clearly defined generalisations. The result is a book of considerable size with such a wealth of information that the reader is left somewhat bewildered, and the seeker for a guiding hand would find it difficult to pick out principles to which the authors hold firmly. The absence of an index does not make things easier. In the section dealing with phrenicectomy, the short paragraphs summarising the authors' ideas about the indications for this operation, based on personal experience of 114 cases, are somewhat at variance with generally accepted views. The balance of the book is curiously uneven; whilst no less than 26 pages are devoted to the anatomy of the posterior scapular artery, the indications for a total thoracoplasty are dismissed in two or three pages. The numerous illustrations are well executed and most informative.

"Why Marry?"

By SYBIL NEVILLE-ROLFE. London: Faber and Faber Ltd. 1935. Pp. 160. 3s. 6d.

THERE is no subject more difficult to regard impartially than sexual morality. The bulk of what is written falls into two general classes, depending upon whether the writer regards marriage as a sacrament or as a social convenience with biological implications. The book under review is a hybrid between these two classes. Its author is the able secretary of the British Social Hygiene Council, an organisation primarily aiming at the suppression of venereal diseases. She professes to approach the problem of marriage in the objective spirit of scientific inquiry; but the reader cannot avoid the impression that Mrs. Neville-Rolfe's attitude is unconsciously coloured by her daily work. The various problems dealt with—pre-marital adventures, divorce, the honeymoon, &c.—are in fact approached, not in the detached spirit of the investigator, but rather in that of the moral propagandist who knows how to select her facts to support her doctrine. The original material contained in the book is mainly composed of extracts from letters which the author has received. Some of these are surprisingly naive. The general thesis of the book is that indulgence in sexual activity outside of marriage is the expression of mental subnormality, abnormality, emotional juvenility, or failure of psychological integration.

British Journal of Surgery

THE October issue (Vol. XXIII., No. -90) contains the following papers:—

Traumatic Hæmangiomatous Tumours of Skeletal Muscle, by ROBERT MALLER (Glasgow). A total of 256 recorded cases are reviewed and a case is reported in which the traumatic origin seemed certain. The lack of capsulation and the progressive enlargement are explained as arising from the repeated traumata of muscular contraction.

Two Cases of Hæmangiomata of Voluntary Muscle, by E. N. MACDERMOTT (Galway). The calf muscles and the erector spinæ were affected. The rarity of correct pre-operative diagnosis and the local malignancy of an otherwise benign tumour are commented upon.

The History of Plaster-of-Paris Technique in the Treatment of Fractures, by J. K. MUNRO (Singapore). The evolution of weight-bearing splints is traced from the stiffened bandages used in the time of Hippocrates. The advantages of early function are discussed.

Hæmorrhage per Rectum as an Indication of Disease in Meckel's Diverticulum, by JUDSON T. CHESTERMAN (Sheffield). The typical syndrome is sudden rectal hæmorrhage in a patient 5-15 years of age, the cause being unexplained by sigmoidoscopy or blood examination. Abdominal colic may precede or accompany the bleeding. Four cases are described.

Intussusception of Jejunum into Stomach through a Gastro-enterostomy Stoma, by J. A. MUNRO CLARSON and W. DOUGLAS MACFARLANE (Glasgow). The accident occurred six years after operation as an acute surgical crisis, and proved fatal within 24 hours.

A Further Note on the Development of Cysts in Connection with the Semilunar Cartilages of the Knee-joint, by ROBERT OLLERENSHAW (Manchester). The experience gained by operation on a further 20 cases is summarised. One case is reported of a cyst projecting towards the centre of the joint.

Angioma of the Kidney: Report of a Case, with an analysis of 26 previously reported cases, by R. H. JOCELYN SWAN and HAROLD BALME (London). Symptomless hæmaturia is the main feature. Nephrectomy is the treatment advised in most cases.

Thrombosis following Strain, by R. H. O. B. ROBINSON (London). Two cases are reported, in both of which the thoraco-epigastric artery appeared as a thickened and tender cord, as a result of thrombosis.

The Late Results of Operations on the Biliary Tract in 359 Cases, with Cholecystographic Studies in 18, by JAMES H. SAINT (Newcastle). The operations were performed between 1907 and 1922. Cholecystectomy gave a greater proportion of good results than did cholecystostomy; and drainage of the common duct was particularly successful. Cancer of the gall-bladder was not an ultimate cause of death in any case.

Traumatic Rupture of the Congenital Solitary Kidney, by J. R. H. TURTON and J. C. F. LLOYD WILLIAMSON (Brighton). A case is described. The means is discussed of obviating nephrectomy in such cases.

Squamous-cell Carcinoma of the Renal Pelvis: Report of a Case, by MAURICE SILVERSTONE (Birkenhead). Two types are recognised: one soon involving the kidney substance, the other producing hydronephrosis.

Sacro-coccygeal Cysts and Tumours, by R. W. RAVEN (London). Teratomata are regarded as malformations. The origin of dermoids, of cysts of the post-anal gut, and of cysts of meningeal origin is described and illustrated.

Pylephlebitis complicating Appendicitis and its Treatment by Ligation of the Mesenteric Veins, by A. M. STEWART-WALLACE (London). Case with recovery. The diagnostic importance of post-operative rigors is emphasised.

Intestinal Obstruction by Gall-stones, by C. P. G. WAKELEY and F. W. WILLWAY (London). The history is reported of 11 cases, all treated by operation. The practical importance of double obstruction is pointed out.

Lymphatic Spread in Cancer of the Rectum, by W. B. GABRIEL, CUTHBERT DUKES, and H. J. R. BUSSEY (London). A hundred operation specimens have been examined and the findings are discussed. Metastases were discovered in 62 per cent., confined, in half the cases, to three glands or fewer.

The Role of Sympathectomy in the Treatment of Peripheral Vascular Disease, by R. I. HARRIS (Toronto). Results obtained in the last four years by operation on 24 cases.

The Peripheral Nervous System, by H. H. WOOLLARD (London). A practical account of the distribution to the limbs and viscera of the various components of the sympathetic and pelvic nerves. Appended is a brief résumé of Dale's findings on the intermediate function of acetylcholine and adrenaline.

The Results of Sympathectomy: An Analysis of the Cases Reported by Fellows of the Association of Surgeons, by J. PATERSON ROSS. The value of the operation is examined in disorders of the circulation, in Hirschsprung's disease, in intestinal stasis, and in renal pain and causalgia. The possibility of consequent disabilities is assessed.

Central Control of the Sympathetic Nervous System, by JOHN BEATTIE (London). An account of the functional significance of the sympathetic and central connexions of the hypothalamus as revealed by recent experimental work.

The Technique of Sympathectomy, by E. D. TELFORD (Manchester). Attention is drawn to the importance of the essential automatism of plain muscle, as partly explaining the tendency to gradual deterioration of immediate good results; and to the variations in the anatomy of the autonomic nervous system. Causes of failure are related to possible errors in technique.

The Effects of Obstruction of the Urinary Tract, and the Effect of Experimental Interference with the Blood-supply of the Kidneys, with particular reference to the Formation of Stones. Two papers by J. GRAY from the Henry Lester Institute, Shanghai. The results obtained in rabbits show that the factors favouring the formation of stones are damage to the epithelium of the pelvis, either by partial obstruction or by vascular interference insufficient to damage the kidney seriously; a dietetic imbalance in the proportion of calcium and phosphorus; and excess of vitamin D in the diet. The stones form around a nucleus of epithelial debris in the cavity of the pelvis, in the presence of an increase of the calcium content of the kidney.

MEMOIRS OF A CAMP FOLLOWER. By PHILIP GOSSE.—This book, which was given favourable notice in THE LANCET (1934, i., 585) on its first appearance, has now been issued by Messrs. Longmans Green and Co., Ltd., London, at 5s.

THE LANCET

LONDON: SATURDAY, NOVEMBER 2, 1935

THE INDEPENDENT MIDWIFE

ABOUT two years ago a council was formed under the chairmanship of Dr. WATTS EDEN to look into the efficiency of the midwifery service in this country and to consider how it is affected by the ability of midwives to earn a livelihood. This joint council was representative in high degree of the professional bodies competent to judge about the problems of childbirth and their solution; it was asked to prepare a detailed scheme for the enlistment of midwives in an organised service, suited to the needs of each district, and leaving the parturient woman free to choose her own attendant; and its report when it was presented last February carried much weight. The council was unanimous in its findings that domiciliary midwifery should continue to form the basis of the maternity service, that a certified midwife should be present at every childbirth, and that the status and remuneration of midwives must be improved. But it went further than this and, with practical unanimity, recommended the establishment of a salaried service of midwives, with the same status as health visitors, under the control of the appropriate local authority. Such a scheme might absorb about 4500 midwives who had not previously been so employed. Obviously it could not include all midwives now in practice, let alone those on the inflated register of the Central Midwives Board, and the council recognised that there must be compensation of those not absorbed in the scheme for the loss of their practice. Six months later the London County Council approved the proposal to establish a salaried service, but Mr. SOMERVILLE HASTINGS, on behalf of the hospitals committee, stated that he was unable to accept the principle of compensation from the rates. It was estimated that 158 midwives would be required by the L.C.C. and several times this number at present notify their intention of doing some midwifery in the county. There has been some talk of a draft Bill for the establishment of a national midwifery service, and proposals have been submitted to representatives of local authorities for their comment.

The crux of the problem is the question of compensation, for it is hardly likely that any scheme of salaried service will prove acceptable to organised midwives which does not include some provision for those who wish to serve and are not accepted, if not for those who are unfitted by age or infirmity. The Joint Council suggested in its report that compensation on these lines might cost no more than £200,000, but admitted that any figure could only be provisional until it was ascertained how many independent midwives are now practising. To obtain this and other information at first hand the Midwives' Institute undertook to send out a questionnaire not strictly limited to

its members. The questionnaire was a searching one, asking not only for the number of cases attended in two specified years (1929 and 1934) and the fee asked, but for details of the economic background of the midwife's life. Some 8000 forms were sent out and more than half these have been returned, not only filled in but often containing corroborative information. Lady FORBER, who will still be better known to many of our readers as Dr. JANET LANE-CLAYPON, offered to analyse the replies for the Institute, and she has embodied the result of her analysis in the Fynes-Clinton lecture delivered at the Institute on Thursday of last week. Lady FORBER found herself unable to examine the whole material in time for this lecture, and she therefore confined her study to three counties, Yorkshire, Durham, and Hampshire, and a part of Lancashire. The analysis relates strictly to independent midwives, excluding those who run nursing-homes without district practice, and maternity nurses who only register as a safeguard. At least one-half of all the independent midwives in the areas considered replied to the questions and the information obtained from them is sufficiently surprising. It will, for instance, be news to most people that the total number of married midwives is greatly in excess of either widowed or single; rather over 10 per cent. of midwives in the sample analysed are over 60 years of age, and many of them have larger practices than the younger women. Few enter practice under the age of 30, and most of these are young married women. The older women have mostly been in practice for a great part of their lives and continue to work as long as they can. Equally unexpected is the fact that in the interval between 1929 and 1934 there has been an increase (Hampshire excepted) in the number of cases attended by independent midwives; but the increase in the number of midwives practising is larger still, so that there is a fall in the average number of cases taken. Of the 562 midwives in independent practice in the areas studied who made returns, half took less than 50 cases in the year, only one out of five had over 100 cases. Fees vary in different areas; in some the charge for any confinement is 42s., in others 35s. for a primipara and 30s. for a multipara. Lady FORBER concludes that a third of all independent midwives cannot be earning more than £50 a year, and probably considerably less, while only one in seven earns £200 or more. Few obtain their whole fees; a midwife tends to be the last to be paid. Except for a small minority the practice of the independent midwife does not afford a living wage, and the reasonable livelihood of the minority is obtained only by attendance on an unreasonable number of cases.

That is the position, and, as Lady FORBER remarked, the facts need to be faced, for the independence of the midwife can hardly be said to exist if she is unable to secure a livelihood as a midwife. Many factors contribute to the difficulty of the position. There are clearly too many women training as midwives with little or no intention to earn their livelihood as such.

Those who take the diploma of the Central Midwives Board as the final touch of a nurse's training or as a branch of social service are entitled to attend confinements if they register with the local supervising authority and to compete with the professional midwife. Surely, said Lady FORBER, a more specialised training should be required for those who profess midwifery than those who take the S.C.M. qualification as a side-show. Something might be done to increase the number of cases available for midwives. It is the policy of the Joint Council that a midwife should be available at every childbirth, having behind her a doctor who has seen the patient beforehand and is ready to come if required. This proposal would finally eliminate the handy woman. In a few places she seems already to have disappeared but in others the many complaints in the schedules testify to her continued activities. Midwives also complain of the loss of practice owing to women who do not actually require in-patient care being attracted to hospital by the low fees charged. At some of these hospitals money is being expended by the taxpayer for the training of midwives in a profession already overloaded and at the expense of its practising members. Apparently, too, midwives seldom get paid for miscarriages or abortions, and as Lady FORBER remarks, all abortions are abnormalities. They frequently give rise to trouble at the time and some midwives report that the only maternal deaths in their practice have followed a recent abortion or a previous pregnancy which ended before term. The problem of the domiciliary midwifery service is indeed complex. The independent midwife, while recognised by Statute, is squeezed from all sides; work has been added for which she receives no extra pay, while the maternity benefit which is obtained on her signature is often used for other purposes; she often fails to get a reasonable fee for attendance on necessitous mothers. These are all matters which claim immediate attention, for even if a salaried service is coming it must take time before it gets into working order, and it can hardly be securely based except on the experience of a fair and free midwifery practice.

ELECTRIC SHOCK

THE first recorded death from electricity was that of a stage carpenter, who in 1879 touched the switch of a dynamo in a Lyons theatre. Since then the use of electricity for industrial and domestic purposes has increased rapidly, and there have been rises in the death- and accident-rates; though fortunately, as Dr. CRITCHLEY told the Medical Society last Monday, conditions in this country have been made relatively much safer. The prevention of electrical accidents comes within the province of the electrical engineer, but to the medical profession the study of the effects of electricity on the human body is one which presents many complex and contradictory features. It is impossible, in the present state of our knowledge, to predict with certainty what will happen when a man receives an electric shock of, say, 250 volts A.C. One man will die,

but another will be none the worse for the experience. Death has been known to be caused by a current of 65 volts A.C., but again a man has received a shock of 48,000 volts A.C. with little or no effect. It is known also that, at medium voltages, alternating currents are more dangerous than direct currents, especially if they pass through the thorax. At very high voltages, however, direct currents seem to be more dangerous than the alternating variety. The explanation of these apparently contradictory facts lies in a combination of electrical and physiological factors, so that in any satisfactory investigation of the features of electric shock, coöperation between electrical and medical experts is desirable. We publish on p. 1021 a contribution by Captain C. W. HUME on electric stimulation in relation to subjective phenomena in electric shock. He comes to the conclusion that an electric shock which does not immediately produce unconsciousness is capable of causing severe pain with temporary paresis of the speech mechanism. The fact that the victim may be apparently unconscious, yet retain perception, makes him dissatisfied with the widespread use of electricity as a means of stunning animals before their slaughter, and also as an anæsthetic for veterinary operations.

JEX-BLAKE in 1913 drew attention to the differences in susceptibility to electric current shown by animals of the same and different species. In man susceptibility varies not only from person to person but also in the same person from moment to moment, owing to the changing conductivity of the human organism. JEX-BLAKE thought that death from electric shock in man is almost always due to a non-reversible ventricular fibrillation, but with very high voltages death might be caused by asphyxia following paralysis of the respiratory centre. HILARY LONG¹ in a review of recent observations on the subject comes to the conclusion that death is rarely due to ventricular fibrillation. The work of LANG-WORTHY, PANZE, and JELLINEK has shown that the main effect of electric shock is on the central nervous system, particularly the respiratory centre. The post-mortem changes are usually those of asphyxia, though lesions in the nervous system are sometimes found, especially when death has been caused by the higher voltages. It is important to understand the cause of death in such accidents, for otherwise it is hard to say what treatment should be adopted in cases not immediately fatal. The Viennese school, of which JELLINEK is the leader, maintains that death from electric shock is due sometimes to a combined cerebral and pulmonary congestion, occasionally to asphyxia, and very rarely to a sudden stoppage of the heart. MELISSINOS,² of Athens, who like LONG has studied the subject with JELLINEK, states that the treatment consists in artificial respiration and lumbar puncture. He recalls that JELLINEK has reported cases in which artificial respiration had no effect until lumbar puncture was done to release the

¹ Long, M. H. E.: *Med. Press and Circular*, August 21st, 1935, p. 150, and August 28th, p. 172.

² Melissinos: *Echo méd. du Nord.*, Sept. 15th, 1935, p. 459.

pressure on the central nervous system and chiefly on the respiratory centre. He suggests that the cerebral and pulmonary congestion found in electric shock is secondary to the direct action of the current on the vasomotor system. It is known that electric currents in the body travel mainly along the blood-vessels. KOUWENHOVEN, HOOKER, and LANGWORTHY³ have shown experimentally that it also passes through the cerebro-spinal fluid, which has a lower resistance than blood. The statement by JEX-BLAKE that a heart in ventricular fibrillation following electric shock cannot revert to normal rhythm has since been questioned; indeed, LONG describes an experiment in which JELLINEK showed that ventricular fibrillation induced by an electric current is a reversible process. He gave a monkey a shock of 110 volts A.C., one electrode being placed on the right side of the chest and the other on the left high. Immediately after the passage of the current an electrocardiogram showed that the heart had gone into ventricular fibrillation. The condition persisted for 19½ seconds after which the heart spontaneously reverted to its normal rhythm. LANGWORTHY has found that the hearts of rats likewise recover their normal rhythm spontaneously after being thrown into ventricular fibrillation by electric currents. Recently JOSEPHthal⁴ has recorded a case of post-diphtheritic ventricular fibrillation with recovery, and SCHWARTZ⁵ a case in which a patient had a number of attacks of unconsciousness associated with transient ventricular fibrillation. It seems therefore that ventricular fibrillation is not necessarily non-reversible or fatal.

Emotional or psychic factors, as HILARY LONG points out, might explain to some extent the variation of responses obtained in electric shock. A man's tolerance of electric currents will depend partly on external factors such as the presence of moisture, and also on his mental state at the time of the accident. If he is exhausted or emotionally disturbed the effect of the electric current will be more severe. Again, if a man is expecting an electric shock, it will not affect him as much as if it came as a complete surprise—a fact which may explain why many electricians seem to develop an immunity against electric currents of medium strength.

SURGERY OF THE SYMPATHETIC

DURING the past ten years so much thought has been devoted to the surgery of the sympathetic nervous system that it is surprising to find little agreement about the precise indications for operation and about the significance of many details in surgical technique. The conceptions of the physiology of the autonomic system upon which surgery has been based have altered considerably during this period, and those who have attempted to study its functions by observing the effects of sympathectomy in man have been much handi-

capped by the presence of permanent structural changes in the denervated organs which interfere with their normal activity. Those who planned the operations were influenced by the ideas, gleaned from animal experiment, that sympathetic impulses were exactly antagonised by those of the parasympathetic nerves, and that the process of regeneration after excision of a portion of a sympathetic trunk was so active that a considerable gap could be bridged by the proliferating nerve-fibres. It is now realised that the interpretation of such experiments may be confused by the combination of sympathetic and parasympathetic fibres in the same nerve trunk; and, further, that the motor or inhibitory function of certain nerves cannot be deduced merely from their anatomical source and their morphological characters. The researches of DALE and his co-workers have shown that many of the cerebro-spinal and all the autonomic nerves produce their effects through the intermediation of chemical substances, and it must be noted that though adrenaline is formed at most of the sympathetic nerve-endings, acetylcholine, which mediates all the parasympathetic impulses, is the substance produced at the sympathetic endings in sweat-glands and at some of those in the gut. The time has therefore come to review our surgical experience in the light of these researches, and with the knowledge that regeneration of sympathetic fibres after excision is now believed to be a negligible factor.

This attitude is reflected in a series of articles in the current number of the *British Journal of Surgery*, reviewed on p. 1008. The conservatism of British surgeons is shown by the fact that in this country sympathectomy is confined almost exclusively to lumbar and cervicothoracic ganglionectomy, presacral neurectomy, and perivascular operations on the mesenteric and renal arteries. The indications also are limited to peripheral vascular disease, intestinal stasis, and the relief of visceral pain, and little or nothing is heard of sympathectomy for epilepsy, neuralgia, retinitis pigmentosa, spastic paralysis, asthma, tachycardia, and hypertension. Surgeons are learning to rely more and more upon preoperative tests in selecting the cases suitable for operation, and reluctance to embark upon the treatment of these conditions may be attributed partly to the difficulty or impossibility of applying such tests to them, and partly to the unconvincing nature of reports from clinics abroad. The value of the preliminary estimation of the degree of vaso-spasm which may accompany any form of peripheral vascular disease is demonstrated by R. I. HARRIS of Toronto, whose figures show how closely the rise of temperature following temporary block of the sympathetic nerves with novocain is related to the improvement in the circulation after sympathectomy, though he is careful to point out that the result of permanent denervation is often more gratifying than the anæsthetic test might lead one to expect.

Turning to the consideration of surgical technique, it is remarkable that surgeons are still undecided upon the extent of the excision necessary to denervate a given organ. In the case of the

³ Kouwenhoven, W. B., Hooker, D. R., and Langworthy, O. R.: *Amer. Jour. Physiol.*, 1932, c. 344.

⁴ Josephthal, F.: *Wien. Arch. f. inn. Med.*, Dec. 10th, 1934, p. 15.

⁵ Schwartz, S. P.: *Arch. Internal Med.*, February, 1932, p. 282.

oesophagus and the colon this is due to the incompleteness of our knowledge of their nerve-supply; but in the case of the limbs it is attributable to the conflicting evidence of physiological experiment and surgical experience regarding the relative values of preganglionic and postganglionic sections. WHITE'S experiments¹ seem to show that removal of the ganglion cells renders the denervated vessels over-sensitive to the action of circulating adrenaline, and some clinicians have seized upon these observations to explain why the results of lumbar ganglionectomy, which is a preganglionic section for the foot, are on the whole so much better than those of cervicothoracic ganglionectomy, which is of course postganglionic for the hand. TELFORD suggests dividing the thoracic trunk below the third ganglion in order to achieve preganglionic section of the arm supply, and points out that this operation has the added advantage of avoiding the unwanted Horner's syndrome, which is inevitable after excision of the stellate ganglion. The late results of this operation will be awaited with much interest.

In attempting to explain the recurrence of symptoms after sympathectomy regeneration of nerve tissue after a properly conducted operation may be left out of account, and it is probable that the secret lies in the automatic activity which the

organs innervated by the sympathetic all seem to possess. The loss of sympathetic control may sometimes render them more susceptible to stimulation by adrenaline, but there is another factor which must not be forgotten. The analysis of the results of sympathectomy prepared for the Association of Surgeons by PATERSON ROSS shows that the success of these operations largely depends on the severity of the disease for which the operation has been performed. This is especially noticeable in Raynaud's disease, in thromboangiitis obliterans, and in the cold blue legs of poliomyelitis and erythrocyanosis, and it may be generally accepted that sympathectomy is of greatest value in the early stages of disease, when denervation may help to rectify a disorder in the function of an organ which has not yet suffered any considerable alteration in its structure. Recurrence of symptoms after operation is not infrequently due to such structural changes, signs of which again manifest themselves after the earliest paralytic phenomena of denervation have passed off. Judgment should not be passed upon the value of sympathectomy without giving careful consideration to the nature of the disease for which it is practised. There is no doubt that the results are often disappointing, but this is the fault not of the operation but of the surgeon who has failed to take sufficient care in selecting the cases suitable for sympathectomy.

¹ White, James C.: *The Autonomic Nervous System*, 1935, p. 92.

ANNOTATIONS

THE RIGHT TO DIE

EARLY in December a meeting is to be held at the house of the Royal Society of Medicine to inaugurate a public society, to be known as The Voluntary Euthanasia (Easy Death) Legalisation Society, which has been formed under the presidency of Lord Moynihan with Mr. C. J. Bond as chairman of the executive committee and Dr. Killick Millard as hon. secretary. The society owes its origin to Dr. Millard, who three years ago devoted to this subject the whole of his presidential address to the Society of Medical Officers of Health, submitting for their consideration the draft of a Parliamentary Bill to legalise the painless killing, at their own wish, of persons suffering from incurable, fatal, and painful disease. This draft Bill has since been revised by high legal authority without substantial modification and is now ready to be introduced by Lord Moynihan in the House of Lords at some suitable time. To meet possible objections on religious grounds, a statement that voluntary euthanasia as proposed by this society is not contrary to the principles of Christianity has been drawn up and signed by a number of representative anglican and nonconformist ministers. The proposal too is regarded as gaining support from what Sir (Saint) Thomas More wrote in "Utopia" about euthanasia, although he did not actually use the word. Copies of the draft Bill, price 6d., can be obtained from Dr. Millard at The Gilroes, Leicester.

WHITE BILE

THE discovery of colourless contents in the gall-bladder or bile-ducts is unusual, and the surgeon may find it hard to assess its significance. Where the gall-bladder is completely isolated the assumption

will be that its wall has absorbed the bile-pigments, and examination of the contents will show that the bile salts, too, have been absorbed. The fluid may be clear or turbid, and the condition may be the outcome of obstruction of the cystic duct either by tumour or by calculus. That a somewhat similar condition may arise in the isolated bile-ducts was demonstrated by a case reported last year by Mr. Norman Lake.¹ This was one in which the lower ends of the common bile-duct and of the cystic duct were simultaneously blocked by new growth, and the result was enormous distension of the bile-ducts, to the calibre of the jejunum, their content being as colourless as cerebro-spinal fluid. E. Melchior² now points out that there is a distinction between the case in which the liver and ducts are still excreting bile of normal colour—which is later decolorised—and that in which there is a failure, primary or secondary, of the liver cells. Quite often this failure is due to back pressure through blockage of the ducts, and drainage of the biliary system may restore the normal liver function and relieve the associated jaundice. In other cases the hepatic failure appears to be primary, without biliary obstruction. Melchior thinks, however, that there is no essential difference between the two classes of case, once the damage to the liver cells has gone far enough. Most probably, he believes, infection plays a considerable part in the causation, although he cites cases in which bacteria could not be found. His advice is that when there is biliary obstruction and the common bile-duct is found to be distended with clear colourless, or milky fluid, the prognosis should be guarded, especially if the obstruction is suspected to be of

¹ THE LANCET, 1934, II, 753.

² Presse méd., August 21st, 1935, p. 1316.

long duration. After operation the reappearance of pigment in the bile draining through the tube is of course a good sign, but final failure of the liver occurred in some of his cases, with reappearance of colourless "bile." Sometimes the flow of fluid was excessive, a condition which Melchior terms "hypercholorrhée" being established. Two litres or more of colourless fluid might drain in the day, and the patient suffer accordingly from the symptoms of rapid fluid loss, sometimes with widespread hæmorrhages (visceral and subcutaneous) in addition. The liver is apt to be tense, enlarged, and firm, and its surface is spotted with tiny white channels looking somewhat like abscesses. These are the small hepatic ducts distended with the same white fluid that appears in the main ducts.

THE FORENSIC CHEMIST

MINDFUL of the debt which legal medicine owes to chemistry, the Medico-Legal Society have elected Mr. C. A. Mitchell, D.Sc., to be their president. In the address delivered to them on Oct. 24th he was able to show how wide had been the application of chemistry in the courts during the last fifty years. In the trial of Palmer, the Rugeley murderer, in 1856 the chemical evidence of strychnine in the body of Cook was discredited by the medical evidence adduced for the defence. Nowadays the chemical evidence is often more decisive than the clinical findings, and many branches of evidence are now exclusively within the province of the chemist. In questions concerning the adulteration of food and drugs the public analyst has won an independent and highly-specialised position, and there are now more non-medical than medical toxicologists available to assist the police. Only the chemist has been able to explode such medical fallacies as the belief that a drunkard may die from spontaneous combustion, or that a body buried in quicklime is destroyed. Chemical evidence, by showing that fire could start by the accidental mixing of such common drugs as permanganate and glycerin, induced the Court of Appeal to hold that the fires in Kingstown at the time of the Jamaica earthquake in 1907 started as the result of the earthquake and not before it. The chemist is often called upon to identify the wood from which charcoal is made by examining its microscopical structure; to decipher writing on burnt paper; or to decide whether material is damaged by salt or by fresh water. By identifying the dust on the clothes of an Egyptian suspect with the fire-proof lining of a broken safe, a chemist of Cairo brought a burglar to justice, and a coiner was convicted on the evidence of a single particle of alloy found on his file and identical with the metal in counterfeit coins which he was charged with making. The chemist can often pronounce on the genuineness or otherwise of a document, for if a document bearing a date earlier than 1861 is printed on esparto paper it is spurious, as is a document purporting to be printed on wood-pulp paper before 1874. The age of ink in writing can be ascertained with precision by testing the surrounding paper and estimating the extent to which the soluble salts of sulphur and chlorine have permeated it. For periods over two years the chemist uses the older method of studying the formation of the resinous deposit, and the difference in age between two sets of writing on the same paper can be distinguished if one is less than ten or twelve years old. Dr. Mitchell, in these and other examples, brought forward ample evidence why the forensic chemist should be recognised as an

independent ally of the medico-legal expert and why, although he is neither a doctor nor a lawyer, he is certainly not a layman in the medico-legal world.

CARCINOMA TELANGIECTATICUM

THE clinical appearances and prognosis of cutaneous cancer are affected not only by the type of the growth, but also by the nature and plane of the cellular tissues it is invading. A spread in the lymphatic vessels, for instance, with a consequent block in lymphatic drainage will lead to exudation and local œdema of the peculiar solid type which the French have termed cancer en cuirasse, or peau d'orange. Of equal importance and interest, though less often observed, is the result of selective invasion of the cutaneous capillaries and smaller blood-vessels. Such a case, illustrated in natural colour, has lately been reported by Dr. F. Parkes Weber.¹ It concerns a woman of 48 who was operated on for carcinoma mammae in October, 1932, and died from secondary deposits in the pleura and elsewhere in May, 1934. The illustration brings out the localisation of the skin changes in the left flank, but hardly suggests the telangiectatic changes, due, as histological examination eventually proved, to vascular involvement by carcinomatous cells. It appears that the small telangiectases are characteristic of this form of malignant invasion, and if this is so there is every reason to support Dr. Parkes Weber's argument that the name suggested by him, carcinoma telangiectaticum, should supersede that devised for similar cases by H. Küttner, of Breslau, and C. Rasch, of Copenhagen—viz., erysipelas carcinomatosum, or erysipelatoid carcinoma.

FREE FALLS IN SPACE

It was formerly assumed that a free fall of over 100 feet produced unconsciousness or even death; but the use of the parachute, and "delayed parachute jumps" in particular, have disposed of this idea. Delay in pulling the ripcord of a parachute may be thought necessary for either of two reasons: first to avoid entanglement with the aeroplane or collision with other jumpers, and secondly in descents from extremely high altitudes. Captain H. G. Armstrong, of the United States Medical Corps, points out² that a jump from 30,000 feet involves the loss of the jumper's oxygen supply, and that if he opens his parachute at once he may lose consciousness or die before he gets to a level at which he will recover. He uses this as an argument in favour of a rapid "free fall" for the first few thousand feet. But while we may agree that a pilot opening his parachute at 30,000 feet, without using oxygen, would probably become partly or wholly unconscious during the first few minutes of the fall, it is generally believed in this country that in such circumstances a fit man would later recover consciousness, probably before reaching the ground. On the other hand, Armstrong's contention that in a free fall to about 20,000 feet a parachutist would retain enough consciousness to open his parachute is borne out by experiment here, provided no great effort has been entailed in getting clear of the aircraft. His suggestion that if it should be necessary to jump from an aeroplane travelling at a velocity of the order of 360 miles an hour the pilot should not open his parachute till he has lost almost all horizontal velocity is sound

¹ Internat. Clin., 1935, vol. iii., p. 145.
² Jour. Amer. Med. Assoc., Oct. 5th, 1935, p. 1107.

enough in theory; but the practical difficulties in the way of making such a jump are considerable, especially as the circumstances which would make it necessary would sometimes make it almost impossible to climb out of the aircraft without serious injury. In such a case, if he still retained enough control of his machine, he might do better to reduce the horizontal component of his speed by a vertical zoom, which would at least reduce the risk of breaking his neck on attempting to climb out. Once his speed had been reduced to that of his terminal velocity for a free fall at the height at which he is flying (about 190 miles an hour at 30,000 feet) the risk of opening the parachute would be much the same at whatever height he opened it; since the reduction in air density at such a height, which raises his terminal velocity from 119 miles an hour at ground level to about 190 miles an hour, would cause the pull of the parachute to be proportionately less than it would be near the ground, these two changes cancelling one another.

Captain Armstrong has himself made a parachute descent from 2200 feet, and describes his sensations before pulling the ripcord. He felt free from fear and excitement as soon as the machine was cleared; he had some loss of auditory perception but consciousness was unclouded. The only recognisable motion during the first two seconds was slow rotation of the body; during the third and fourth second, with the eyes still closed, even this rotation ceased and the only feeling was that of being suspended in mid air; not until the eyes were opened was a definite sensation of falling experienced. His physical sensations were almost nil. There was no nausea nor vertigo; breathing was regular and unhurried; no abnormalities were noted in the cardiovascular system; the eyes though unprotected were not irritated and vision was normal. The only physical sensation consisted of a very gentle evenly distributed generalised superficial pressure on the downward surface of the body. These experiences in general accord with those described by parachutists like the late John Trantum, who in May, 1933, made the world's record delayed parachute jump from a height of 21,000 feet. On this occasion Trantum used a small supply of oxygen and had previously undergone a chamber test in which the rate of pressure change in such a fall was exactly reproduced, in order to see whether he could sufficiently equalise the pressure on both sides of his tympanic membrane to avoid serious trouble, which he found he was able to do without difficulty. Trantum mentioned the same sensation of tumbling head over heels for about a mile and then gently floating, with his head downwards and the body at an angle of about 45°, and slowly rotating about his longitudinal axis; he said he could control this rotation by merely moving one hand out from his body to act as an air-brake. He too had no sensation of posture without the aid of vision; this is only to be expected, for in a free fall, where the acceleration due to gravity is affecting the whole body except for the retardation due to friction, the fluid in the semicircular canals, without losing any of its mass, loses nearly all its weight and so gives no indication of posture; and since no part of the body is resting on any material thing there is no information to be gained by muscle sense. The loss of auditory acuity may be either local, through the altered pressure on the tympanic membrane, or central; or it may perhaps have been the ordinary deafness which many people experience when exposed to the noise of an aircraft engine.

Armstrong estimates that without the use of oxygen anoxemia begins to develop in human beings at about 10,000 feet, producing dyspnoea at 15,000 feet, unconsciousness at about 22,000, and death at about 27,000 feet. Naturally this can be no more than a rough estimate, since the condition is continuously progressive in relation to both height and time. But we doubt whether dyspnoea occurs in fit pilots at 15,000 feet unless they do an unusual amount of muscular work.

PATHOGENIC ACTINOMYCETES

IN the past the actinomyces group has been in a sad way, falling, as it were, between two stools. This group of infective micro-organisms lies on the borderline between the true fungi and the bacteria which multiply by fission. It does not yield easily to orthodox bacteriological methods, and has been neglected by mycologists. Consequently the descriptions of strains that have been isolated are often poor and ambiguous, and the resulting confusion has inspired ambitious rearrangements and renamings of the group which have led to still greater confusion. Recently the need for a reliable system of classification has been aggravated by the description of actinomyces isolated from conditions other than frank mycetomata. The pathogenicity of strains from the latter, though still presumptive, is fairly well established. There are a number of strains, however, whose connexion with the lesion in which they are found is less demonstrable. Among such strains are those isolated by Dr. A. G. Gibson¹ from the enlarged spleens of sufferers from splenic anaemia, Banti's disease, and acholuric jaundice. A few years ago Dr. Gibson sought assistance from the Medical Research Council in a systematic examination of these strains, and at the same time presented to the National Collection of Type Cultures, maintained by the Council at the Lister Institute, a fully documented series of the organisms. These strains formed the nucleus of the material studied, in parallel with another and much larger series from other sources, by Miss Dagny Erikson,² who has now published a report on her systematic investigations. In all 50 strains were examined by her, and on the basis of the type of growth-mass have been divided into two main groups and further subdivided according to pigment production, proteolytic powers, and their growth in and on a variety of culture media. By these means Miss Erikson has regrouped several known strains and created 15 new species. She fails to confirm the extreme degree of variability claimed for the group by some observers, and finds that though individual characteristics vary with the culture medium used, there is a sufficiently stable aggregation of them to enable a species to be recognised as such. Full descriptions of the colonial and individual morphology of 25 strains are supplied, illustrated by over 100 line drawings. The value of this careful study would have been enhanced had the sizes of the organisms been explicitly stated and had terms like "large," "small," "minute," and "pin-point" applied to colony form been translated into measurements either of modal size or of limits of variability. In all other respects Miss Erikson's report provides a most useful groundwork for future workers, both as a reference to type species and a basis of classification. More differential methods

¹ The Mycoses, 4th Edition, London, 1920.
² The Pathogenic Group, Medical Research Council, H.M. Stationery Office. Pp. 61. 1s.
 nomyces No. 203.

will no doubt be required. Biochemical tests have a limited use, owing to the slowness of growth and the poor fermentative power of the organisms, and advance may most reasonably be expected from the application of the methods developed by J. Tomesik,³ Stone and Garrod,⁴ and J. T. Duncan⁵ in their serological analyses of some of the lower fungi.

"NARCO-LOCAL" ANALGESIA

THE advantages which can be gained by the use of local instead of general anaesthetics for major surgical operations have more often been pointed out by continental surgeons than by those of English-speaking nations. An article, however, in the *Medical Journal of Australia* of July 6th, in which Mr. C. E. Corlette recounts his views and practice after an experience of 18 years, gives impressive support to those who recommend local analgesic methods. Corlette points out clearly the disadvantages of purely local means of obviating pain and the necessity for dealing effectively with the psychological aspect of operation and of protecting the patient both from mental anguish and from all memory of any actual pain if this is inadvertently inflicted. The essential feature of his method, apart from gentleness in operating, is the logical and reasoned employment of suitable premedication. This is carried out by divided doses, generally two, of morphia and scopolamine. The first injection is two hours before operation; most surgeons who use this premedication have erred in giving it at too short an interval beforehand. Moreover the susceptibility at different ages has been insufficiently studied. Corlette finds that a man of 20-25 years of age is between two and three times as tolerant of morphia and hyoscine as he is thirty years later. The dosage is arranged accordingly, and the article provides a table showing the routine doses from 11 to 84 years of age. In practice, of course, these figures are not rigidly followed, the experienced man taking into account the physical and mental features of the patient which he knows influence susceptibility in one direction or the other. It is certain that if a surgeon can acquire the experience and will take the necessary trouble he can achieve by "narco-local" analgesia results which it is impossible to better, if to equal, when general anaesthetics have to be relied upon.

ANONYMOUS LETTERS

LAWYERS have more direct concern with the writers of anonymous letters than have psychiatrists, but the latter can properly claim such people as subjects for their art. A few reports on the psychological aspect of this disagreeable symptom are available. In the latest of them however Dr. Karl Gross⁶ shows himself cautious as to its morbid significance; he points out that not all of those who write anonymously are criminals or scoundrels or psychopaths; they may be journalists or politicians. Apart from such obvious exceptions, questionable only by the cynic, the majority of those who write anonymously do so to gratify or manifest inclinations which are part and parcel of a psychopathic disposition. Few of them do so on the grand scale of a Junius; their field is often petty, and the style appropriate to the matter; but whatever the abilities or aim of the writer, his motive is constantly to be found in thwarted desires and morbid tendencies.

This does not mean that he is independent of his present milieu and driven solely by forces within himself. The violent suppression of opinion which now obtains in many countries is a manure in which these particular weeds sprout amazingly. Among the outstanding characteristics of the anonymous letter writer on which Dr. Gross remarks are obscenity and sexual attacks; the usual decencies are cast aside. Few of the writers are insane; many of them are hysterical and given to fantastic lying; others are hypomanic, compulsive, or paranoid. They may be of any age; the majority are women, and they are more prone than men to be salacious in such letters. They may persist for many years in their attentions, which are often prompted by jealousy, envy, or revenge. A craving for thrills and artistic display may be evident, and occasionally other members of the family have been induced to join in the business. The treatment of the psychopaths here in question is usually in the hands of the courts; but it would be a good thing if, in deciding it, not only the noxiousness of these people to society could be taken into account, but also the degree of their accessibility to the methods of modifying morbid trends now at the disposal of the psychiatrist.

BERI-BERI OR TREMATODE INFECTION?

THAT cysticercus infection of the brain may mimic epilepsy has been clearly shown by Major-Gen. W. P. MacArthur. A parallel discovery, made in the Philippine Islands,¹ is that the symptoms of wet or cardiac beri-beri are sometimes traceable to infection with minute trematodes of the family heterophyidae. These parasites have been found in 9 of 108 almost consecutive autopsies at Manila, and in 6 of these the naked-eye conditions, taken with the symptoms, seemed to justify a certificate of death from cardiac beri-beri or acute dilatation of the heart. The number of heterophyid worms present in the lumen of the intestine was small, and no eggs were seen in its contents; but such examinations do not disclose the weight of infection, for if the mucosa is scraped successive collections of flukes can be made, and sections show them in the intestinal wall with little reaction around them. Further examination was made of the heart muscle of these persons, and in it were found not only at least one fluke but a number of eggs ranging from $16 \times 10 \mu$ to $33 \times 25 \mu$ according to the species of trematode; they lay in spaces apparently caused by rupture of muscle-fibres and containing also blood and much oedematous fluid. It is thought that the sequence was embolic blocking of capillaries by eggs from the intestine, followed by violent spasmodic contraction and breakage of the muscle-fibres. No investigation of other organs or tissues was made at the time; but if the eggs reached the coronary arteries by the circulation they must equally have reached other parts, and in that case it will be surprising if they are not found to produce in them symptoms which are at present being overlooked. In order to separate this infection from cardiac beri-beri in those countries where raw fish is eaten there is a wide and seemingly profitable field of research; but it can be no easy one if, as stated, eggs are absent from the faeces when there is infection with these particular heterophyids. The lesions must be caused by side-tracked individuals which can by no means carry on the race, but have apparently become more dangerous to man.

³ Zeit. f. Immun. Forsch., 1930, lxxi., 8.

⁴ Jour. Path. and Bact., 1931, xxxiv., 429.

⁵ Brit. Jour. Exper. Path., 1932, xlii., 459.

⁶ Wien. klin. Woch., July 12th, 1935, p. 927.

¹ Africa, C. M., Garcia, Ensebio Y., and de Leon, Walfrido: Jour. Philippine Islands Med. Assoc., 1935, xv., 358.

TREATMENT OF INTUSSUSCEPTION

ON another page of this issue Mr. Elliot-Smith argues persuasively in favour of a conservative attitude towards irreducible intussusception. Instead of trying to remove the mass, in part or whole, he would merely relieve the obstruction by a lateral anastomosis, and he is able to record good results from this relatively safe operation. It is interesting to learn from a monograph¹ by Gullichsen, of Helsingfors, that even more conservative measures have lately taken on a new lease of life in Scandinavian countries, chiefly because of the new possibility of controlling its course and observing its results by means of radiography. Gullichsen traces the history of the method since Olsson and Pallin published four successful cases in 1927. In one, at which he himself assisted, the barium enema was injected primarily for diagnostic purposes but proved accidentally therapeutic. A general anaesthetic is not usually necessary; the child is held firmly on the X ray table. The enema is then administered and the container is gradually raised so that the pressure of the fluid reduces the invagination. The distended ileum may mask the final few inches, and abdominal manipulation may be needed to bring it into view. The reduction should be gentle and gradual, and takes about 10-15 minutes. Violent pressure should not be used, and, if there is any doubt about success, open operation should be resorted to without delay. Gullichsen speaks of four tests of disinvagination. (1) With an incompetent ileocaecal valve, the opaque fluid can actually be seen entering the small intestine. (2) When the ileocaecal valve is competent, the smooth and regular outline of the distended caecum is to be looked for; any irregularity of the inner border is presumptive evidence of incomplete reduction and calls for operation. (3) The calmness of the child is further proof of a return to normal. (4) Expulsion of gas after the evacuation of the opaque enema is a valuable sign of success. The objection to non-operative treatment is that it can be useful only in early cases and may lead to delay. Where operation is required and the intussusception cannot be reduced Gullichsen is on the whole in favour of rapid resection. But Mr. Elliot-Smith is certainly right in saying that this is very dangerous to young children.

THE NOBEL PRIZE FOR MEDICINE

It is announced from Stockholm that Dr. Hans Spemann, professor of zoology at the University of Freiburg in Breisgau (Baden), has been awarded the Nobel prize for medicine. Spemann and his school have been doing fundamental work in experimental embryology since the beginning of the century. He has been concerned particularly in demonstrating the energising action of certain parts of the embryo on others: for example, the action of the optic vesicle in promoting lens formation, the organising power in the dorsal lip of the blastopore, or the self-orientating properties of the growing auditory vesicle. Such investigations led, of course, to more intricate experimentation and the formulation of more or less definite hypotheses concerning regulation of growth and the potencies of embryonic parts, whatever might be their presumptive fate ordinarily. These researches open up important questions of growth and differentiation, and have already profoundly

modified our conceptions of normal and abnormal bodily processes.

Dr. R. M. F. Picken, professor of preventive medicine in the Welsh National School of Medicine, has been appointed by the Health Organisation of the League of Nations as representative of Great Britain on an American study tour, which begins at Washington on Nov. 4th and ends in New York on Dec. 7th.

On Tuesday, Nov. 5th, Dr. Daniel T. Davies will deliver the Bradshaw lecture on peptic ulcer at the Royal College of Physicians of London. On Nov. 7th and Nov. 12th Dr. J. D. Rolleston will give the FitzPatrick lectures, speaking on the history of the acute exanthemata. The Lloyd-Roberts lecture will take place on Nov. 14th when Dr. C. G. Seligman, F.R.S., will speak on the Roman Orient and the Far East. All the lectures will be given at 5 p.m. at the College, and members of the medical profession will be admitted on presentation of their cards.

Mr. William Adams Frost, who died on Oct. 25th at the age of 82 years, was consulting ophthalmic surgeon to St. George's Hospital and consulting surgeon to the Royal Westminster Ophthalmic Hospital. He was joint author with Brudenell Carter of a popular student's manual, and just forty years ago brought out an atlas of the fundus oculi, which was the first thing of its kind.

BRITISH POSTGRADUATE MEDICAL SCHOOL.—A refresher course for general practitioners will be held at this school from Nov. 18th to Nov. 30th. Besides members of the staff lecturers will include Mr. R. T. Payne, who will speak on the treatment of varicose veins and varicose ulcers, Dr. Alexander Joe (infectious fevers), Prof. F. J. Browne (toxæmia of pregnancy), Dr. C. W. Buckley (chronic arthritis and sciatica and lumbago), Mr. Sydney Scott (earache), Dr. H. Crichton-Miller (psychology in general practice). During the course sessions will be held at the National Hospital, Queen-square, the Royal London Ophthalmic Hospital, City-road, and the Hospital for Sick Children, Great Ormond-street. Further particulars will be found in our advertisement columns.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Arrangements have been made for the following all-day courses to be held: urology at St. Peter's Hospital (Nov. 4th to 16th); medicine, surgery, and gynaecology at the Royal Waterloo Hospital (Nov. 11th to 23rd); proctology at St. Mark's Hospital (Nov. 25th to 30th). Afternoon courses will include venereal disease at the London Lock Hospital (Nov. 18th to Dec. 14th); infants' diseases at the Infants Hospital (Nov. 25th to Dec. 7th); dermatology at the Hospital for Diseases of the Skin, Blackfriars (Nov. 25th to Dec. 7th). A week-end course in gynaecology will be given at the Samaritan Free Hospital for Women on Nov. 16th and 17th, and another on chest diseases at the Brompton Hospital on Nov. 30th and Dec. 1st. A clinical and pathological course for M.R.C.P. candidates will take place at the National Temperance Hospital on Tuesday and Thursday evenings at 8 p.m. from Nov. 26th to Dec. 12th. A debate on maternal mortality will be held at the Royal Society of Medicine at 8.30 p.m. on Wednesday, Nov. 13th, when Dame Janet Campbell and Prof. J. Munro Kerr will propose the motion that the present rate of maternal mortality is a discredit to modern obstetrics and Prof. Gilbert Strachan and Prof. Daniel Dougal will oppose it. All members of the medical profession will be welcome at the debate, for which no admission tickets are necessary. Further particulars may be had from the secretary of the Fellowship at 1, Wimpole-street, W.1.

¹ Gullichsen, R.: *Etude sur l'Invagination Intestinale*, Acta Chir. Scand., 1935, Suppl. lxxvi.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXV.—PROGNOSIS OF GASTRIC AND DUODENAL ULCER

THE difficulties of diagnosis in patients suffering from gastric and duodenal ulcer have been largely overcome by modern technique in radiology, and it is now possible to detect chronic peptic ulcers with a considerable degree of certainty apart from the occurrence of hæmatemesis, melæna or perforation. In consequence many patients who in former years were diagnosed vaguely as some form of dyspepsia are now known to be cases of peptic ulceration. Moreover, there have been considerable advances in the treatment of peptic ulcer both by medical and surgical means. In consequence, experience on which to base the prognosis of ulcers diagnosed and treated by modern methods is relatively limited, and most of the earlier statistics on the subject are of little value.

Acute Ulcers

Peptic ulcers, whether gastric or duodenal, may be classed as either acute or chronic. Speaking generally, patients with an acute ulcer have little or no history of dyspeptic symptoms, and the diagnosis often only becomes apparent as the result of some sudden catastrophe such as hæmorrhage or perforation. The prognosis with acute ulcers is on the whole far better than in the case of the chronic variety. Although hæmorrhage may be severe it is seldom fatal, and the ulcer has a natural tendency to heal under the influence of rest and suitable diet. Acute ulcers are probably infective in origin, and provided that any septic foci, such as teeth or tonsils, are dealt with the patient may never have any recurrence of symptoms. The actual mortality from hæmorrhage due to an acute ulcer is probably between 2 and 4 per cent. of patients who develop this complication. Many acute ulcers may ultimately become chronic as a result of lack of treatment, gastric hypersecretion, or interference with gastric motility.

Chronic Ulcers

The prognosis of chronic peptic ulcer may be considered from two points of view: (1) mortality, and (2) morbidity. It must not be forgotten that many patients with chronic ulcers drag out a miserably dyspeptic existence to a relatively advanced age. In connexion with the prognosis as regards mortality, the possibility of a carcinoma developing on a simple ulcer must be considered.

CAUSES OF DEATH

How then may a peptic ulcer lead to the death of a patient? Obviously the two most dangerous and frequent complications of an ulcer are perforation and hæmorrhage. Death from the former is now relatively uncommon, provided adequate surgical treatment is promptly available. Nor are deaths from hæmorrhage frequent in relation to the large number of patients who suffer from chronic peptic ulcers. Probably not more than 20 per cent. of ulcers bleed severely, and of these not more than 5 to 10 per cent. die of hæmorrhage. The age of the patient is an important factor in prognosis. Death from hæmorrhage due to a chronic ulcer is very unusual before the age of 50. On the other hand, there is a much increased risk with elderly patients whose arteries are atheromatous. Patients rarely die unless they have several hæmorrhages

within a short time, and if further bleeding takes place it usually does so within four days. Consequently in cases of severe hæmatemesis it is usually safe to give a good prognosis, at any rate as regards immediate risks, if four to five days have elapsed without recurrence. Modern methods of treatment, especially transfusion, and the disinclination of surgeons to operate when a patient is bleeding have materially improved the prognosis. Pyloric stenosis or hour-glass stomach, both of which may result from peptic ulcer, may endanger life by severe malnutrition or alkalosis. In such cases the results of surgical treatment are usually good.

It is difficult to say with any certainty what proportion of patients with chronic ulcers are ultimately operated upon, but it is probably in the neighbourhood of 25 per cent. The immediate risks of operation are by no means negligible, and in all probability are far greater than the danger of death from hæmorrhage. The average mortality following all operations for ulcer is certainly not much less than 5 per cent., even in the hands of reasonably competent surgeons.*

Apart from the immediate risks of death from operation there are smaller but very definite dangers due to the development of such serious complications as gastrojejunal or jejunal ulcers and gastrocolic fistula. Most surgical statistics suggest that these complications occur in only between 2 and 4 per cent. of patients operated on for ulcer. Physicians who often have to deal with operative failures would probably put this figure considerably higher. The mortality of secondary operations is very high, and the chances of a completely successful result relatively small.

At this point the question of the risk of malignant changes developing in peptic ulcers must be raised. Carcinoma of the duodenum is practically unknown, and patients with duodenal ulcers run no special risk of developing malignant growths. This, however, is not true of gastric ulcer, where undoubtedly carcinoma may supervene on a simple ulcer. How frequently this occurs is a matter in which there is a wide difference in opinion. Speaking generally, most clinicians regard the risk as small, whereas many pathologists take the view that malignant change occurs in a high proportion of gastric ulcers. The main argument against the idea that carcinoma often develops in a simple ulcer is that patients with carcinoma of the stomach rarely give any indication in their past history of symptoms pointing to a chronic gastric ulcer. Whereas most patients who come under treatment for gastric ulcer have obviously suffered from the condition for many years, at least 80 per cent. of proved cases of carcinoma of the stomach have had perfect digestions until a comparatively short time before the presence of a growth becomes apparent. It may therefore be argued that the risk of death from a gastric carcinoma is little greater in patients with peptic ulceration than it is among the general population.

The general conclusions from the facts cited above indicate that the prognosis as regards expectation of life is not very unfavourable in patients known to be suffering from chronic peptic ulcer. It is

* The mortality-rates of the various operations were differentiated in a previous article in this series on the Prognosis in the Surgical Treatment of Peptic Ulcers by Sir James Walton (THE LANCET, 1934, ii., 37).

probably true to say that if 100 patients with proved ulcers, gastric and duodenal, were traced throughout life not more than five or six would be found to die as a direct result of the presence of the ulcer.

MORBIDITY

If we now turn to the prognosis as regards the maintenance of good health and continued freedom from symptoms we are faced with a far more gloomy picture. The frequency of relapses renders the condition serious and sometimes completely disabling. Although both medical and surgical treatment can claim a good proportion of permanently successful results, only too often the tale is one of continued relapses in spite of treatment.

The outlook as regards the rapid relief of symptoms under medical treatment is extremely good. Nearly all patients with uncomplicated ulcers, whether gastric or duodenal, are relieved of their pain within one week of instituting strict medical treatment with rest, diet, and alkalis. Unfortunately the improvement is often not maintained for very long when the patient has returned to a normally active life.

STATISTICS

There have been a number of statistical inquiries into the after-histories of patients who have received medical treatment for chronic peptic ulcers. Some of these date from twenty or more years ago and are of little value owing to the inadequate methods of diagnosis then in use. In more recent statistics the after-history of the patient has been studied for a relatively short period, so that it is difficult to judge to what extent cures have been permanent and complete. One disquieting fact does, however, emerge from the published figures—namely, that the longer the period of observation after medical treatment, the greater becomes the proportion of relapses and the smaller the proportion of complete cures. This indeed is true not only of medical but of surgical treatment of ulcers. Gastrojejunal or jejunal ulcers may develop even ten years or more after operations such as gastrojejunostomy. It is doubtful whether medical treatment effects a complete and permanent cure in over 50 per cent. of cases, whether gastric or duodenal. The value of any statistics in which the patients have been followed up for less than four years is very problematical.

Statistical inquiries, however carefully conducted, into the late results of treatment for gastric and duodenal ulcer, whether medical or surgical, can do little beyond show certain percentages of cures and failures. Such inquiries can be of little help in assessing the prognosis of the individual patient. When faced by the prospect of a long course of dietetic treatment, or perhaps even of an operation, the average patient will find only cold comfort in the fact that a certain percentage will do well and a certain percentage badly. What the patient really wants to know is what are his own chances of a successful result. Is it possible by a careful consideration of the individual patient to form a reliable judgment as to his future progress? On what grounds are we to differentiate between a favourable and an unfavourable prognosis in the individual case?

FACTORS IN PROGNOSIS

Although giving a prognosis is necessarily a hazardous procedure, particularly in a disease such as peptic ulcer, there are certain general principles which are of value.

The first and perhaps the most important factor in assessing the prognosis is the fact that the chance

of a permanent cure varies inversely with the *chronicity* of the ulcer. Peptic ulcers which are diagnosed early—within six months or even a year of the onset of symptoms—are undoubtedly more amenable to medical treatment than are those which have been present for many years. Unfortunately at the present time few patients with ulcers are diagnosed and efficiently treated until they have had a series of relapses, each one longer and more severe than its predecessor. At any rate, with patients of the hospital class it is rare for any serious attempt to be made to treat the patient until the ulcer has been present for many years, and sometimes not until cicatricial changes have produced mechanical derangements, such as pyloric stenosis or hour-glass contraction. Other things being equal, therefore, a short history justifies a good prognosis, while in the very chronic cases with histories of numerous relapses over many years optimism is unlikely to be justified. With increasing clinical knowledge and the increased efficiency of radiology, it is to be hoped that more ulcers may come under strict treatment in their earlier stages. When this happens, the late results of medical treatment should improve.

Another important factor in prognosis is the *age of the patient*. Elderly patients with ulcers, whether gastric or duodenal, are notoriously unsatisfactory, and often even with strict and prolonged treatment the ulcer may fail to heal and recurrences are extremely common. In the case of elderly patients with large gastric ulcers there is always the possibility of malignancy. A fractional test-meal with a high or normal acid curve makes this contingency very unlikely, but even so a large gastric ulcer in any patient over 60 is unlikely to heal satisfactorily under medical treatment.

In assessing the prognosis in patients with duodenal ulcers a very *high gastric acidity* is an unfavourable sign. The ulcer is more likely to recur if the concentration of acid is very great and if such patients have gastrojejunostomy performed there is a considerable risk of gastrojejunal or jejunal ulceration. On the whole duodenal ulcers tend to occur earlier in life than do gastric ulcers, and they usually react more satisfactorily to medical treatment. Ulcers, either gastric or duodenal, which have penetrated deeply, causing erosion of the pancreas or liver, frequently completely fail to respond to medical treatment and require surgical intervention.

The ultimate prognosis also depends to a considerable extent on the *psychology* of the individual patient. Medical treatment cannot be effective without the close coöperation of the patient, and calls for great attention to detail, perseverance, and self-control. Only too often patients with peptic ulcer, particularly duodenal ulcer, are of the active over-anxious type; it is often difficult to persuade such patients of the necessity for a strictly controlled life and régime, once the troublesome symptoms have passed off. The ultimate prognosis must be unfavourable in any patient who is unwilling to amend his ways as regards smoking, alcohol, irregularity of meals, overwork, late nights, and the pleasures of the table. All these factors predispose to a recurrence of ulceration, and if the patient has not sufficient strength of mind to control himself, not only for months but even years, further trouble is almost inevitable. Only too often it needs some dramatic complication, such as a severe attack of hæmatemesis, to render the patient amenable.

Finally the *family history*, the *social status*, and the *occupation* of the patient are important. A history

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POST-GRADUATE LECTURES

THE two lectures summarised below were given at week-end post-graduate courses held this autumn in the London teaching schools. Mr. Patterson, whose lecture was illustrated by instruments, radiograms, and drawings, spoke at the London Hospital, and Mr. Gwynne Williams at University College Hospital.

DIRECT INSPECTION OF THE LARYNX, LOWER PHARYNX, LOWER AIR-PASSAGES, AND GULLET

(MR. NORMAN PATTERSON)

FOR the direct examination of the air-passages and œsophagus there are so many different forms of instrument that it is often difficult to select the type best suited for a particular case. In dealing with the laryngopharynx and larynx, instead of a tubular laryngoscope, I prefer some form of suspension apparatus or directoscope. With such an instrument both hands are free for manipulations, binocular vision is often possible, and the biting-out of a piece of tissue for biopsy or the removal of an innocent tumour can be carried out with great precision. Employing a suspension instrument a tumour or cyst can sometimes be removed accurately by dissection. In working at a lower level a bronchoscope with terminal illumination offers many advantages over one which carries a light at its proximal end. With such an instrument manipulation with forceps is greatly facilitated and it is much easier to gauge the relationship of the forceps to the distal end of the tube. In some cases tubes fitted with a lens, and giving a magnified view of structures, are useful.

In this country there is still a great deal of prejudice against the direct examination of the air-passages with the bronchoscope. If properly carried out, a bronchoscopy is, unless there is some definite contra-indication, practically free from danger; even in the presence of serious disease in the lungs, provided no general anæsthetic is administered, the risk is infinitesimal. If bronchoscopy were performed as frequently as it ought to be no doubt many negative findings would have to be recorded; a report that the bronchial tree is healthy may, however, be useful to the physician.

Recently I paid a very short visit to Philadelphia and I had the pleasure and honour of being shown over the Temple University Hospital Clinic by Dr. Chevalier Jackson, a man who by his genius and untiring energy has done more for the science and

art of bronchoscopy than any other worker in this field. I also had the advantage of visiting the clinics of Drs. Tucker and Clerf. The amount of work which is being done at these clinics is simply astounding. The diagnosis and removal of foreign bodies, of which there are a very great number, forms but 2 per cent. of the total number of cases.

It is rather a common fallacy that, apart from dealing with foreign bodies, there is not much of a field for the endoscopist. I will mention only a few of the conditions which may call for bronchoscopic inspection; they include dyspnoea due to tracheal or bronchial obstruction, certain cases of atelectasis, bronchiectasis, abscess, obscure cough, wheezing, asthma, and so forth. In Philadelphia the most delicate operations are carried out in children, no anæsthetic being employed. Even in infants it is sometimes found necessary to pass a bronchoscope.

It is interesting to note that early in the century Brünings, a pioneer in the subject, stated that the use of a tube of less than 7 mm. diameter was impracticable, and if the child's larynx was too small to admit a tube of this size investigation must be made through a tracheotomy opening. Now tubes of 3 mm. or even less are employed.

Associated with the rapid progress made in bronchoscopy much has been done by physicians, and the name of McCrae deserves special mention in connexion with the symptomatology and physical examination of the chest in foreign body cases and those due to disease. It must be admitted that occasionally a foreign body may be present in a bronchus with a complete absence of either signs or symptoms. Such a case was admitted to the London Hospital a short time ago, when I removed a metallic body, visible of course on X ray examination, from the bronchus of a child. Careful physical examination revealed no changes in the chest. A foreign body may also lodge in the œsophagus and give rise to no signs of its presence or cause misleading symptoms referable to the air-passages. There are various symptoms which point to partial obstruction of a bronchus or to a foreign body which is moving about in the tracheobronchial tree. Adventitious sounds may then be produced. For instance, the impact of a body against the sub-glottic region may produce a characteristic noise. I have met with two cases in which children aspirated portions of toy musical instruments. The active part of the instrument in both cases continued to function while lying in the bronchus and a whistling noise could be heard at some distance.

Many interesting chest conditions result from the presence of foreign bodies. Owing to movement of an object to a new position, sometimes on the other side of the chest, the physical signs may undergo sudden alterations. With regard to the effect of a foreign body on the thoracic contents much depends on its position, relative size, and composition. Organic bodies are liable to cause irritative and inflammatory changes. In estimating the importance of the changes found on physical examination the anatomy of the bronchial tree must be kept carefully in mind, and of course an intimate knowledge of the anatomy of this region is necessary to the successful radiologist and bronchoscopist. A tumour occupying a bronchus or one of its branches will produce symptoms in many respects comparable to those caused by a foreign body. Symptoms and physical signs will vary with the situation, attachment, whether

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of peptic ulceration in other members of the family is not very uncommon and is an unfavourable prognostic point. Patients who are financially independent do better than those who have to worry about an early return to work, as the former are more likely to be able to afford the necessary time and expense for thorough treatment. Any occupation which involves a life with irregular or hasty meals, does not conduce to permanent cure. This is well exemplified by the frequency of duodenal ulcer in the medical profession.

J. J. CONYBEARE, M.D., F.R.C.P.,
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sessile or pedunculated, and amount of obstruction caused by the tumour.

It is easy to demonstrate by X rays an opaque foreign body. When the body is non-opaque, areas of increased dullness or translucency or the presence of displacement of the heart and diaphragm may point to the existence of a foreign body. I cannot here go into all the various uses to which the bronchoscope may be put; I will only mention one condition where bronchoscopy may prove of the greatest help. It is well known that a large proportion of malignant growths of the lungs start in the larger bronchi. The early symptoms are insignificant and it may be impossible to make certain of the diagnosis without a direct visual examination. Occasionally a tumour which has all the appearances of malignancy turns out to be of an innocent nature and its removal may result in a complete cure. The tumour may prove to be due to some other cause such as chronic inflammation, tubercle, or syphilis. A stenosis or distortion of the bronchial wall may be produced by an extramural tumour.

To the thoracic surgeon a report by the bronchoscopist may be indispensable. It may indicate the extent and nature of the operation to be performed or it may reveal a condition which cannot be dealt with surgically. In inoperable cases the insertion of a radon container or radon seeds has been followed by relief which may extend over years.

Œsophagoscopy should be employed in the removal of all cases of foreign body in the gullet with the exception of bodies which have passed through the wall of the tube into the tissues of the neck. The most common form of œsophageal obstruction is unfortunately due to malignant disease, and here treatment with radium or by radical surgery has been almost a complete failure. The best that can be done is generally an early gastrostomy.

There are many other causes of œsophageal obstruction, some of which lend themselves to treatment. Fortunately, in this country stricture due to the swallowing of lye, which is common in American children, is practically unknown.

SURGICAL TREATMENT OF ARTERIAL OBSTRUCTION IN THE LEG

(MR. GWYNNE WILLIAMS)

A FEW years ago the only surgical treatment of these defects of the arteries of the lower limb would have been the performance of an amputation, usually a major one above the knee-joint, to deal with a fully developed gangrene. Now operations designed to paralyse the sympathetic supply to the limb offer some hope that the death of the part may be prevented, or at any rate postponed, and the comfort of the patient promoted.

In a limb in which the vessels are normal, such as the cold leg of a patient who has been paralysed by anterior poliomyelitis, the excision of the lumbar sympathetic cord will produce a permanent change. The skin of the limb will be warm from the middle of the calf downwards and the patient is saved from the painful foot and chilblains which every winter has brought. Such a perfect result could not be hoped for in a limb in which the vessels are diseased. Various methods have been tried in order to test beforehand whether paralysis of the sympathetic will bring about the desired result: they include injection of foreign proteins, spinal analgesia, anaesthetisation of the peripheral nerves, and the warming

of the patient while the affected part is kept outside the direct influence of the heat. These tests undoubtedly in many cases enable a forecast to be made of the effect of sympathectomy, and if any of them is to be used the last is the preferable method. Spinal analgesia is not a procedure to be lightly undertaken; I have had considerable experience of it and it is not devoid of risk. At present my impression is that in some cases in which the tests predict the failure of a sympathectomy the operation will be followed by success.

The next question is as to which of the clinical features of arterial obstruction will be affected by the sympathetic paralysis. The only changes which we can directly observe are those in the skin: the foot will become warmer and will lose its blue-red colour; small patches of dead skin will separate and indolent ulcers will heal.

The other conspicuous feature of the obstruction—namely, intermittent claudication associated with a deficient blood-supply to the muscles—does not seem to be so certainly influenced. This might be expected if it is true that the vessels of the muscles are not dilated after sympathectomy. There are cases in which the patient who has had the sympathetic removed is able to walk further without suffering pain, and the analogous relief of angina pectoris by removal of the stellate ganglion make it desirable that further observations should be made on the results of such operations.

I have here to-day a patient of 56 who came to the hospital eighteen months ago complaining of intense pain in the right foot, which she had had for three years. The foot was red-blue and cold, and her toes were so tender that she resented their being touched. There was a small patch of gangrene on the tip of the big toe. At first glance the case seemed eminently suitable for a lumbar sympathectomy, but a further examination showed that she had a systolic blood pressure of 250 and that her heart was in such a condition that it was doubtful whether that operation would be justifiable. Something had to be done for her pain since it prevented her from sleeping, so I injected some 50 per cent. alcohol into the posterior tibial nerve behind the malleolus and a few days later into the peroneal nerves in front of the ankle. I was hoping to produce a temporary anaesthesia and possibly a more permanent sympathetic paralysis. The immediate effect was naturally a loss of the pain associated with the analgesia and the foot became warmer and of a more normal colour. The dead patch separated, the skin healed, and the patient went out relieved of her symptoms although the anaesthesia had disappeared a few weeks after the injection. This relief of symptoms lasted for a year, after which she returned with her foot in the condition which she had originally shown. I again attempted an alcohol injection but failed to hit off the nerves, so a month ago I cut down on the nerves and excised an inch from each of them. The operation wounds have healed slowly, indicating the deficiency of the circulation; but her foot, while slightly pinker than the opposite one, is almost normal in colour.

The improvement in the circulation must be due to local paralysis of the sympathetic and this and the sensory nerve action have relieved her pain. I have succeeded in two other cases with the alcohol injection, but it is not always possible to hit off the nerve, and it is better to excise a portion of the nerves.

Perhaps I have said enough to show you that

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SPECIAL ARTICLES

ELECTRIC SHOCK AND SUBJECTIVE SENSATION

IN RELATION TO ANÆSTHESIA AND HUMANE SLAUGHTER

By C. W. HUME, M.C., B.Sc.

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WHEN an electric shock is strong enough to make a person inert, he usually becomes unconscious almost at once; but cases have been known in which persons, apparently unable to move or speak, have retained both consciousness and sensibility to pain. It is naturally difficult to discover what are the chances of this happening. With accidents the conditions cannot be controlled beforehand, and the information available afterwards is apt to be scanty and lacking in precision. Deliberate experiment, on the other hand, is restricted by the risk of fatal consequences.

The data summarised in this article were collected in the hope of throwing some light on the question whether the use of electricity as a preliminary to the slaughter of animals for food is, in fact, a reliable means of producing unconsciousness. I hope, however, that they may have a more general interest.

FACTORS WHICH DEFINE THE ELECTRICAL STIMULUS

In electrical accidents it is usual to regard the voltage as the factor that determines the strength of the shock, but actually the voltage gives very little indication of the real strength of the stimulus. The only electrical factor which really matters is the current-density at some crucial point in the organ affected.¹ It is conceivable that the direction of the current with respect to the axis of the vulnerable organ may also affect the results, but so far as I am aware there is no experimental evidence that it does so.

The current-density depends on a number of factors, one of which is the voltage. It must be remembered, however, that by far the greater part of the voltage-drop occurs at the contact of the electrodes with the skin, and that the resistance at this region is not only very high but very variable. The hand-to-hand resistance of a human being is usually reckoned as a few thousand ohms, but if the resistance of the skin itself be eliminated, the remaining resistance—that of the deep tissues—amounts to

¹ By current-density is meant the amperes per sq. cm. of cross-sectional area.

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something can be done surgically for this arterial deficiency; but I must emphasise the fact that these measures are not likely to be successful when any mass of tissue has died, and that it is therefore essential that the pre-gangrene condition should be recognised.

The pre-gangrene changes have been most widely observed in thrombo-angiitis obliterans, since in this condition the progress of the disease is slow; but if sought for they will be found in the arterial change associated with raised blood pressure, old age, and diabetes. In these conditions any treatment which holds out the promise, however faint, of avoiding the mutilation of a major amputation should be tried.

only about 200 ohms. When, therefore, we remember that the dampness of the skin, and consequently its conductivity, varies greatly from person to person, we shall see clearly that the voltage between the electrodes no more indicates the strength of the shock to which a person is subjected than the horsepower of a car indicates the speed at which it is travelling. Cases are known in which a workman has for a wager subjected himself to a shock of 500 or 1000 volts: the trick consists in first drying the hands with methylated spirit. On the other hand, it is generally held that 50 volts alternating current is capable of causing death.

It is impracticable to measure the current-density at each point in the body or the brain. The nearest, in practice, that we can get to specifying the strength of the electrical stimulus is to state the size of the animal, person, or part affected, together with the amperage, if possible, or failing that, the factors which determine the amperage—namely, the voltage, the state of the skin (moist or dry), and the pressure or firmness of contact between the electrodes and the skin. In other words, the current-density depends upon the amperage and on the size of the part through which the current spreads out. The amperage in turn depends upon the voltage and on the resistance in circuit. The resistance depends mainly on the size of the electrodes, the dampness of the skin, and the firmness of contact between the electrodes and the skin.

The next most important factor in the electrical stimulus is the wave-form. It is well known that when a potential-difference derived from a battery is applied to a muscle or nerve, the reaction is considerable at the moment when contact is made or broken, but is inconsiderable so long as the current is merely left flowing. In other words, it is the rate of change of direct current rather than the strength of the direct current itself that is of physiological importance. For this reason a shock from direct-current mains is far less effective than a shock from alternating-current mains; for alternating current consists of a direct current whose strength varies continuously at the rate of about 50 cycles per second, passing from a maximum positive to a maximum negative value and back again in each cycle. In other words, it is a direct current whose strength is constantly changing.

Another type of current which has to be considered is the intermittent direct current produced by interrupting the current from a battery say 100 times per second, the current being left on for one-tenth of each cycle and turned off for the remaining nine-tenths. With an alternating current the strength changes smoothly from one extreme to another, passing through all intermediate values; but with an intermittent direct current the changes are sudden. Hence we should expect that for a given current-strength the intermittent direct current would have considerably more physiological effect than the alternating current. This expectation is fully borne out by experiments on pigs. The strength of alternating current which is usually recommended in this country in a slaughter-house for pigs is roughly 800 milliamperes, but Regensburger obtained precisely similar results with intermittent direct current of the order of one-twentieth of this amount.²

² Details are given in the Animal Year Book, 1935, vol. iii., chap. 7 (Univ. London Animal Welfare Soc., 42, Torrington-square, W.C.1).

It has been customary, in cases where the current strength was measured at all, to give simply the reading of a milliammeter in series with the animal, but this procedure is misleading to those who are not electricians. For instance, with an intermittent direct current the reading of the instrument can be increased by leaving the current on for two-tenths or three-tenths and off for eight-tenths or seven-tenths of each cycle; and if this is done the increase in the reading of the milliammeter bears no relation to the increase in the strength of the stimulus.

It must be remembered that an ammeter does not record the instantaneous value of the current, which varies far too rapidly to be indicated by any instrument other than an oscillograph. The ammeter records the mean current or more usually the root-of-mean-square current, and the foregoing remarks apply to the changes of instantaneous current which would not be indicated by an ammeter.

At the risk of undue repetition, it is desirable to emphasise the fact that "mean current-strength" may have two different meanings, for confusion often arises in the non-electrical mind on this point. The instantaneous values of a current varying at, say, 50 cycles per second have a mean which is recorded by the ammeter. This must be distinguished from the mean of a series of ammeter readings.

If, however, the current-strength is increased while the wave-form is kept unaltered, we have to consider whether most effect is produced by making the increase all at one stroke, or by carrying it out step by step. It would appear that the step-by-step method is likely to be less effective than the all-at-one-jump method. This remark applies to those changes of mean current-strength which are made so slowly as to be observable on an ammeter.

Another factor which determines the strength of the stimulus is the frequency of the current. Increasing the frequency from 50 cycles to 100 cycles per second makes very little difference to the effectiveness of the stimulus; but if the frequency is increased to hundreds of thousands, or millions, of cycles per second the results are totally different. The nerves and muscles have no time to respond and the only noticeable effect is the development of heat in the tissues. It is for this reason that in electrothermal treatment high-frequency currents may have a strength very much greater than that which would be fatal if the current were of low frequency.

PASSAGE THROUGH HEART AND BRAIN

We have next to consider the point at which the electrodes are applied and the path which the current follows. Kouwenhoven³ has shown that the current has a specific effect on the organ through which it passes, and the organs which we have to consider are the brain and the heart. It must be borne in mind that the current does not flow along a straight line from electrode to electrode but spreads out in all directions into the tissues, being strongest in the direct route from electrode to electrode, but weaker and weaker at points that lie further and further off this route.

Kouwenhoven showed by direct measurements that when a current was passed from the fore limbs to the hind limbs of a dog, 10 per cent. of it passed through the heart. A comparatively weak current, he found, would produce fibrillation which lasted until death ensued. A comparatively strong current on the other hand caused complete stoppage, but after an interval the heart again began to beat either of its own accord or after restorative action. It has therefore been proposed that where a person's

heart has been sent into fibrillation by electric shock, any curative treatment should be preceded by a second shock sufficiently strong to stop the irregular action. In most electric accidents it is the effect of a current passing through the heart that has principally to be considered, whereas in the slaughter-house we are concerned with the effect of passing current through the brain. This effect is twofold. In the first place the muscles of the whole body are strongly stimulated; if the current is strong enough vertebrae may even be fractured by the violence of the muscular contraction. For this reason, if for no other, the use of electric stimulation as an alleged anaesthetic for surgical operations is to be deprecated. In the second place the current inhibits breathing, so much so that artificial respiration has normally to be applied after electric shock. The most important point to observe is that an animal can be rendered inert and apparently unconscious for several minutes by a shock which leaves no detectable lesions in the brain. If it is allowed to recover, its behaviour may become perfectly normal; so that, whatever the cause of the muscular contraction, immobilisation, and inhibition of breathing may be, this cause does not consist in any damage to the brain. After brain shocks caused by strong currents cerebral lesions may be found; but the current-density necessary to produce such lesions is substantially greater than that used in the slaughter-house.

SUBJECTIVE EXPERIENCES IN ELECTRIC SHOCK

As a rule electric shock occurs in such a way that the current passes through the trunk, and therefore through the heart. If unconsciousness is not immediately produced, the victim's sensations are a sense of burning and of pain due to excessive stimulation of the muscles. Usually, however, he becomes unconscious at once.

More difficult and more interesting is the question at what stage unconsciousness ensues when currents of moderate strength are passed through the brain. So far as I am aware there is no case on record where unconsciousness has been caused in a human being by the passage of current through the brain alone, unless that current was strong enough to inflict actual damage on the brain. Ledue, in 1902, in trying to find an electrical method of anaesthesia, allowed a current to be passed through his head, with the result that his assistants supposed him to be completely unconscious for twenty minutes. As soon as the current was turned off, however, he was able to say that he had been continuously and fully aware of all that was going on. The current used in his case was very weak. More recently, in 1925, Dr. Hertz⁴ at the Rothschild Hospital in Paris made similar observations on patients with incurable disease. His currents were considerably stronger; in fact, when allowance is made for the difference in wave-form the stimuli he used were almost as strong as those commonly employed on pigs in the slaughter-house. But they were not quite so strong, for the subjects recovered their mobility as soon as the current was turned off, whereas pigs usually remain paralysed for half a minute or more afterwards. All of Hertz's subjects retained consciousness throughout the experiments and were able to indicate the places where they had been pinched. The current was raised to a strength sufficient to stop their breathing for a short time. The pupil reflex was inhibited, but not other reflexes;

³ Kouwenhoven and others. The following papers may be consulted: *Elect. Eng.* (New York), 1930, xlix., 25; 1931, l., 406; 1933, lli., 475; *Jour. Indust. Hyg.*, 1932, xiv., 197.

⁴ Hertz, J.: *Rev. de path. comp.*, 1933, xxxiii., 385.

all voluntary motion was inhibited. Thus the tests gave results generally similar to those which were applied when the present system of electric "stunning" was pronounced to be humane.

Electrical accidents may throw some light, albeit a very uncertain light, on the problem; but they suffer, as I have said, from the disadvantages that we cannot choose the conditions under which they will occur and that quantitative data are usually very incomplete. I have however collected a number of instances from electrical engineers who have suffered shock, and have described a few cases in full elsewhere.² They prove that it is possible to retain the sense of pain, which may be severe, while speech is inhibited.

The whole subject is one which calls for very thorough study. In view of the commercial vested interests and the partisanship which have become involved, assertions have to be carefully tested in the light of evidence; and usually it will be found that the evidence is inconclusive. I am aware of at least one laboratory where electric immobilisation is being used for the purposes of producing anaesthesia, though fortunately for experiments which would not in any case be particularly painful. In many slaughter-houses in this country and throughout the world the system is in use in the confident belief that it produces genuine anaesthesia. Considering the scantiness of the really reliable data this is a very unsatisfactory state of affairs.

How the question is ever to be settled it is for physiologists to decide. So far as I am aware they cannot at present say why or how an electric current acting on the brain produces the effects that it does produce. These effects seem to differ in certain respects from those produced by an ordinary anaesthetic, and I venture to suggest that superficial tests carried out with a few commercial instruments should not be regarded as sufficiently radical to justify the use of electricity for anaesthetising animals.

MEDICINE AND THE LAW

Use of the Description "Manipulative Surgeon": A High Court Decision

LAST November the Paignton magistrates dismissed summonses under Section 40 of the Medical Act against Captain Horace Barrow, described as a bone-setter, who had used the title of "manipulative surgeon" after his name on the gatepost of his house and on his motor-car. When invited by the Medical Defence Union to justify or discontinue these words he replied that he was not using the title of "surgeon," and would not give up the description on his plate until it was proved that he was not a "manipulative surgeon." As we pointed out at the time (1934, ii., 1186) the Medical Defence Union was not contending for a monopoly of medical or surgical treatment; Captain Barrow was not summoned for manipulating his patients' limbs, but simply for the adoption of a description which blurred the distinction made by the Medical Act between qualified and unqualified practitioners. An appeal against the decision was heard in the King's Bench Division on Oct. 25th, when Captain Barrow's counsel contended that the title "manipulative surgeon" had been used for at least 20 years to describe a person not registered under the Medical Act, 1858, who could manipulate bones and joints for the purpose of healing. Lord Hewart in delivering judgment said it was proved or admitted that

Barrow had outside his house a plate bearing his name and the words "manipulative surgeon." He was described in like terms on his motor-car and in the telephone directory. He was not registered under the Medical Act, nor was he a qualified medical practitioner within the meaning of that Act. Captain Barrow had expressed his willingness to adopt some other name to describe his work if another name could be found which would properly describe it. "It is quite obvious," said Lord Hewart, "that there are other names which would fulfil that purpose, as, for example, the words 'manipulative healer.'" If Captain Barrow desired to represent that he was not a qualified surgeon it was unfortunate that he should choose the description "surgeon." The thing which made that name appear to be attractive and useful was, said Lord Hewart, precisely the thing Section 40 of the Medical Act, 1858, was enacted to prevent. The appeal, he said, must be allowed and the case sent back to the justices with the direction to find that the offence which was charged had been proved. After delivering his formal judgment, Lord Hewart added: "Speaking for myself I cannot imagine any adjective which, being added to the title 'surgeon,' would excuse the use of the word 'surgeon' by a person not registered or recognised as a surgeon under the Act of 1858 unless, as in the case of a veterinary surgeon, he is expressly protected by statute." Justices Humphreys and Singleton concurred.

Failure of Bruno Hauptmann's Appeal

The full report of the judgment dismissing Bruno Hauptmann's appeal from his conviction for murder in the Lindbergh baby case has now arrived from America. This sensational trial, which led to a special law being passed against kidnapping, has less medico-legal interest than might have been expected. It had been rumoured that the appeal would be fought on a denial of the identity of the missing baby with the dead body which had been found buried not far away from the Lindberghs' home. The rumour proved false. The defence at the original trial had announced that the identity of the corpse was not challenged. To spare the mother's feelings, questions relating to identification were not put to Mrs. Lindbergh in the witness-box; the police were, in any event, prepared to establish identity beyond all doubt. If a slight overlapping of one of the baby's toes was inconclusive, Col. Lindbergh had been satisfied by examination of the teeth of the dead body, since, shortly before the child was kidnapped, he and Mrs. Lindbergh had very carefully inspected the teeth and had noted certain peculiarities. Another point of identity was the unusual size of the opening of the fontanelle; and, finally, the hair from the head of the disinterred body could have been proved identical with a lock of hair which the child's grandmother had cut from his head. The appellate court of New Jersey announced that a verdict of "Guilty" was inevitable in view of (a) Hauptmann's possession and use of the ransom money, (b) the handwriting of the notes in which the ransom was claimed, and (c) the identification of wood used in the ladder abandoned by the criminal near the Lindberghs' house with wood taken from Hauptmann's own house. This last point was established by patient and skilful research.

The delay in bringing on this American appeal is in contrast to the swift procedure in our English Court of Criminal Appeal. The papers in Hauptmann's case were, however, voluminous and the

appeal was set down too late for the spring session of the New Jersey "Court of Errors and Appeals." Among the many grounds relied upon by the appellant's counsel were (1) that the dead child's father (with other prominent persons unconnected with the case) was present in the court throughout the trial, (2) that there were frequent demonstrations of laughter and applause by spectators, (3) that messengers and clerks disturbed the proceedings, and (4) that press reports and radio broadcasts were made freely. The appeal court found no substance in these matters, especially as no protest was made at the time. Another unsuccessful ground of appeal was that the jury had been allowed the use of a magnifying glass. "We see no more objection to this," said the court, "than to the use of eyeglasses by an individual juror." The judges further declined to accept appellant's contention that the opinion of handwriting experts, based on mere comparisons, "must be esteemed proof of low degree." In its general procedure and legal attitude the New Jersey court is but little different from an English court; but there is one striking exception. For ancient and historical reasons, based partly on mistrust of lawyers and partly on suspicions of the judges appointed by the Crown in the early days of the colony, the New Jersey Court of Errors and Appeals includes lay judges; the nine fully qualified lawyers on the bench had four laymen as their colleagues on this occasion. In one other respect there was a further difference. The Attorney-General of New Jersey, when addressing the jury finally on behalf of the prosecution, was said to have expressed his personal belief in Hauptmann's guilt and to have used vituperative words about him. The appeal court took no notice of this; protest should have been made at the time; moreover, counsel for Hauptmann has expressed a personal belief in his innocence. In an earlier New Jersey case, cited on the appeal, a prosecuting counsel had described a defendant as "a monster in his passions, licentious in his desires, beast in his love, brutal when thwarted, and cowardly when caught." Even these full-blooded denunciations were ruled not to have been a ground for interference with the subsequent verdict.

The failure of all the points raised on Hauptmann's behalf is presumably final. His representatives are said to be considering an appeal from the New Jersey courts to the Supreme Court of the United States. This could only succeed if the Federal Court thought Hauptmann had not been tried, in the famous language of the United States Constitution, with "due process of law"—e.g., if the atmosphere of the trial was so charged with prejudice that the trial was unfairly conducted.

LONDON MEDICAL EXHIBITION

(Concluded from p. 979).

WE gave some account last week of the exhibition in the New Horticultural Hall where nearly 170 stands, adequately displayed, afforded medical practitioners the chance of seeing the best and latest in drugs and pharmaceutical products, the wide choice of new foods and vitamin preparations, and of handling the improved surgical instruments and appliances. A few stands of a more general character remain to be mentioned.

Books and Journals

(21, 22) BAILLIÈRE, TINDALL AND COX (7 and 8, Henrietta-street, W.C.) had a display of medical books from this country and America published by

themselves and other firms, and specially pointed out the fourth edition of Bigger's "Bacteriology"; Griffith's "Injury and Incapacity"; Köhler's "Röntgenology," a new translation of the latest German edition; and the fifth edition of J. L. Livingstone's "Aids to Medicine."—(20) WILLIAM HEINEMANN LTD. (99, Great Russell-street, W.C.) specially selected from their show of books "Woman," in three volumes, by Pless and Bartels, a historical, gynaecological, and anthropological compendium; and also mentioned Souttar's "Radium and Cancer," and the same author's "Art of Surgery"; and the Van de Velde series, of which the latest is "Ideal Birth."—(32, 40, 41) H. K. LEWIS AND CO., LTD. (136 and 140, Gower-street, W.C.), showed their range of medical stationery and furniture, especially the new Unix multiplying book-case unit; and from among their general display of medical books pointed out the catalogue of their lending library and the new edition of the "Extra Pharmacopoeia," ready immediately; the first annual issue of "Reports on Chronic Rheumatic Diseases," edited by C. W. Buckley; Bailey and Love's "Surgery for Nurses," and "A Short Practice of Surgery"; the collected papers of St. Mark's Hospital; a new edition of Moncrieff's "Nursing and Diseases of Children"; and "Urology" by Roche, an addition to the "General Practice" series.—(76) MEDICAL PRESS AND CIRCULAR (8, Henrietta-street, W.C.) showed their popular journal written by specialists for general practitioners, with its symposia and four special numbers on special subjects; also a series of reprinted articles on Modern Treatment in General Practice.—(25) OXFORD UNIVERSITY PRESS (Amen House, Warwick-square, E.C.) drew attention to Russell Brain's "Diseases of the Nervous System"; Samson Wright's "Applied Physiology"; Campbell and Poulton's "Oxygen and Carbon Dioxide Therapy"; and the fourth edition of "Woodward's Manual of Medicine."—(156) THE PRACTITIONER (6-8, Bouverie-street, E.C.) reminded visitors of their valuable monthly journal, and specially pointed out their enlarged issue on recent advances in treatment, and other symposia in special numbers.—(98) JOHN WRIGHT AND SONS, LTD. (Bristol), publishers of the "Medical Annual," showed Böhler's "Treatment of Fractures"; French's "Index of Differential Diagnosis"; Hutchison's "Index of Treatment"; and Semon and Moritz's "Atlas of the Commoner Skin Diseases."

Spas and Miscellaneous

(60) BATH had a stand to remind visitors of the only natural hot springs in Britain, and showed illustrations of their mud pack, hot pool, and thermal vapour treatments, and of the deep bath with under-current douching.—(39) BUXTON said that the most important new feature at this spa is the clinic for patients of limited means which has been open since midsummer. For an inclusive and moderate fee patients can now obtain board, lodging, medical advice, spa treatment, and all necessary pathological investigations.—(178) A. C. COSSOR LTD. (Cossor Works, Highbury-grove, N.5) showed their improved model portable electrocardiograph in which the camera, amplifier, and recorder have now been united in one unit, with a small H.T. separate unit for A.C. or D.C. mains or a car battery. They pointed out the value of their apparatus, which has no string to break, which is protected from all distortion, and which suffers no ill-effects from overloading. They had also a mobile hospital unit designed chiefly for students, as it is visual only and has no camera.—(9) GAS LIGHT AND COKE CO. (Horseferry-road, S.W.) showed some of the newest gas fires for consulting-rooms and wards, with self-lighting switches which may be worked either at the fireside or at a distance; and claimed that the modern fire changes the air in the room four or five times an hour.—(152) HARROGATE informed visitors that short-wave diathermy is an important feature of the service

(Continued at foot of next page)

BRITISH MEDICAL ASSOCIATION

MEETING IN MELBOURNE

SECTION OF OTO-RHINO-LARYNGOLOGY

Mr. F. MUECKE presided over the meeting of this section when Mr. L. GRAHAM BROWN (London) read the opening paper on the treatment of

Chronic Suppurative Otitis Media

He said that the first duty of the doctor was the prevention of chronic middle-ear suppuration. This consisted in (1) teaching rules for diminishing the likelihood of aural infection; (2) its proper care and treatment in the acute stage, especially when complicating exanthematous fevers; and (3) searching for and treating a focus in nose and nasopharynx, or in the mastoid itself. A less generally known cause was latent mastoiditis, especially in young children. This condition might be suspected when an acute otitis media did not resolve in 10 to 14 days, no obvious exciting cause being present. In these cases radiograms were of great value, enabling the surgeon to make a diagnosis, and to intervene before the suppuration became chronic. A simple mastoidectomy was usually quite adequate. The aim of treatment was to deal with the suppurative focus, at the same time preserving maximum hearing. For this reason, conservative measures were first choice and a cure was to be expected in 70 to 75 per cent. of cases. The best response was obtained in those cases where the infection was confined to the atrium of the middle ear, and the perforation was in the centre of the tympanum. Many methods of conservative treatment were available, but the following "wet" method was considered very suitable: the instillation of hydrogen peroxide drops into the meatus, followed by syringing with boric acid solution. This was followed by guttae S.V.R., or pulv. boric. + 1 per cent. iodine. No improvement after 2-3 months in adults, or after 1-2 months in children, usually indicated the necessity for surgical treatment. Minor surgery, to promote better drainage, to allow antiseptics to penetrate, and to remove diseased tissue, cured only a few cases, but was nevertheless justifiable, especially when more radical methods were refused. When planning a major operation, the surgeon had to find the happy medium, and this

would mean dealing adequately with the pathological lesion, but at the same time not unduly diminishing the function of hearing. As the extent of internal damage could often be assessed only at the time of operation, it was best, when the indications were not precise, to proceed conservatively, extending the operation as found necessary. Complete radical operation would be found necessary in most patients suffering from chronic otitis with threatened intracranial suppuration; in those subject to acute exacerbations complicated by facial paralysis of recent onset, or with cholesteatomatous involvement; in those which showed clinically definite sagging of the post-superior meatal wall, and evidence of underlying osteitis; and in those which had resisted conservative treatment.

Simple mastoidectomy was particularly indicated, the speaker continued, in most cases of early chronic suppuration resisting conservative treatment, especially in children when latent mastoiditis had been diagnosed. It would probably also suffice in cases where the tympanic membrane did not appear unduly reddened, but where pus could be aspirated into the cleansed meatus from the antral region, the perforation being situated in the posterior portion of the membrane, even though it were central or marginal. Three points were important in this operation: (1) The incision should be made some distance behind the posterior auricular sulcus. (2) All diseased cells should be opened up. (3) No plastic operation should be performed on the meatus. Mr. Graham Brown had adopted a method of post-operative drainage giving complete satisfaction. About 5 c.cm. of eusol were syringed in through a small tube emerging at the lowermost part of the wound every 1-2 hours during the waking period for 3-4 days. This gave great relief, promoted quick healing, and caused no irritation. Sometimes he used two tubes. A modification of the conservative-radical operation, as first practised by Heath, was used in attic disease. Here, if it was necessary to remove the necrosed incus, it was advisable also to remove the head of the malleus, thereby providing better drainage. During the first week of after-treatment the meatus must be packed firmly with narrow ribbon gauze. Persistent suppuration after operation might be due to faulty technique; skin or muscle grafts, or some plastic form of operation on the meatus might then be found necessary. In conclusion the speaker said that future advance could be expected in better prophylactic measures, and in restoring the mobility of the oval and round windows.

Dr. ROBERT GODSALL (Sydney) favoured conservative treatment for as long as three months or longer if there were favourable indications. He thought zinc ionisation was useful and liked boric powder with 1 per cent. iodine. Polypi should not be removed surgically, but should be cauterised with silver nitrate. Attic syringing was dangerous unless there was a large tympanic opening, as meningitis might result. Vesiculectomy was not indicated; this was difficult to perform and the disease had usually spread beyond the area concerned making cure impossible. "Wet" ears after operation were usually due either to involvement of the Eustachian tube—if this remained patent—or to the outer attic wall being insufficiently dealt with.

Dr. H. J. GRAY (Perth) thought X ray examinations of great help in diagnosing the extent of chronic otitis media, and also in assessing the degree of cure. He thought that swimming was very dangerous in ear infections and that no type of ear pad was efficient.

(Continued from previous page)

offered to patients, and that Fango, the medicinal mud, is yielding very good results. Diet schemes have been drawn up by the medical profession for half a dozen conditions and many of the hotels undertake to enforce them when required.—(110) INHALING DRUG AND APPARATUS CO., LTD. (87, Eccleston-square, S.W.), were present again with their Collison inhaler for the administration of oxygen with vaporised liquids, used chiefly for the treatment of asthma, bronchitis, and pneumonia and also for the nasal passages.—(67) KOLYNOS INCORPORATED (Chenies-street, W.C.) showed their popular dental cream and powder and liquid Kolynos mouth-wash.—(58) MEDICAL SICKNESS ANNUITY AND LIFE ASSURANCE SOCIETY LTD. (300, High Holborn, W.C.) had their usual stand, where they proffered good advice on all kinds of insurance.—(157) SPARKLETS LTD. (93, Regent-street, W.) emphasised their auxiliary atomiser for the Sparklet carbon dioxide hygienator, which provides an economical means of supplying small quantities of any desired solution in a highly atomised form.

He advised surgical intervention in otorrhoea accompanied by much smell, if this latter could not be removed by two weeks' treatment. Syringing was in his view good, but should be done only by a trained person; he used antiseptics before going on to spirit preparations. Surgery had very little value in bilateral otitis. His practice covered a very large geographical area and he thus had to vary his treatment according to what kind of after-care could be performed.

Dr. J. Acomb (York) dealt mainly with prophylaxis; in his opinion little advance in treatment had been made since the introduction of the radical mastoid operation. This operation, he hoped, would become extinct. He advised operation if the hearing was becoming progressively worse. He had seen three cases of preoperative facial paralysis within one month.

Dr. H. M. JAY (Adelaide) mentioned that conductive deafness, without cochlea deafness, was an indication for operation, as this would not lessen the hearing in the ear.

Dr. A. B. K. WATKINS (Newcastle, N.S.W.) treated cases of running ear after an acute otitis media by removing infected tonsils, polypi during the first six weeks, and then doing simple mastoidectomy if necessary. In post scarlet fever otitis he operated earlier.

Mr. J. F. O'MALLEY (London) considered osteitis to be the chief factor, the osteitis being situated mainly in the region of the tympanic ring—except in the case of cholesteatoma. He always tried to treat superficial osteitis, and he gave a better prognosis if he could heal it.

Dr. D. GUTHRIE (Edinburgh) emphasised the importance of prophylaxis, and mentioned the fact that children with an acute otitis media, followed by an acute mastoiditis, seldom developed a chronic otitis.

Dr. C. M. O'HALLORAN (Sydney) said that in spite of prophylaxis very chronically inflamed ears would be encountered. In his experience, a narrow skull was conducive to a running ear.

Dr. J. H. SHAW (Melbourne) said that quick healing and epithelisation might be prevented by excessive and prolonged packing.

Dr. HUGH MITCHELL (Melbourne) mentioned that the ears of slum children admitted for operation after a period in hospital for a time sometimes dried up so that operation was unnecessary. He attributed this to good diet containing fresh fruit and vegetables. Mastoid and chronic otitis media cases, he said, were much more common in England than in Australia, probably for reasons connected with diet.

The PRESIDENT said that the incidence of ear troubles in England had dropped since the removal of septic tonsils had been practised, but the number of chronic otitis media cases was still high, probably due to the neglect of treatment in the earlier stages.

Mr. GRAHAM BROWN, in reply, spoke of the importance of having a mucous-lined cavity after operation to preserve the elasticity of the membranes. He said that the tympanic membrane adhered to the bone because the mucous membrane was destroyed. Exposure was an additional factor in making swimming dangerous in the presence of ear troubles.

A paper on

Sphenoidal Sinusitis and the Pituitary Gland

was read by Dr. CLIVE EADIE (Melbourne). He showed several dissected specimens illustrating the

close relationship of the sphenoidal sinus to the pituitary gland; this relationship, he explained, was the reason why inflammation in the former could readily involve the latter by lymphatic spread. The sinus infection was of three main types: (1) acute, especially in influenza, in which the pituitary was hyperemic and therefore active; (2) chronic catarrhal, in which the pituitary would become involved only during acute exacerbations, or if the process became chronic; and (3) chronic suppurative, when definite pus and organisms were present. *Streptococcus viridans* and *Staphylococcus aureus* were the commonest types of organisms found in a long series of cases. Citelli and Pickworth had demonstrated involvement of the hypophyseal system in sphenoidal sinus disease. Dr. Eadie showed records of 12 cases of sphenoidal sinusitis, associated with pituitary dysfunction, on which sphenoidostomy had been performed. The pituitary dysfunctions included genital disorders, loss of weight, headaches, mental changes, apathy, and epileptic attacks; 10 cases showed improvement after operation, and in 1 case the symptoms were relieved by pituitary extract. Sphenoidal sinusitis was found in 2 cases operated on for pituitary tumour. Records were also shown of 5 post-mortem cases. In 3 of these the pituitary was macroscopically and microscopically normal, in 1 atrophied, and in 1 large with hemorrhagic spots, the sphenoidal sinuses being diseased in each case. Dr. Eadie thought that the importance of this condition was not at present fully realised.

Dr. T. G. MILLAR (Melbourne) read a paper on

Ultra-violet Light Therapy in the Treatment of Laryngeal Tuberculosis

He used a Kromayer lamp, but instead of the usual right-angled applicator he had devised a curved one. His technique was as follows: The throat and larynx were anaesthetised, and the epiglottis hooked forwards by the lamp held in the right hand, with a post-nasal mirror held in the left hand directing the rays exactly on to the lesion. An exposure of from $\frac{1}{2}$ to 5 minutes was used, daily in institutions and weekly in private practice. The dose was regulated so that no subjective symptoms were produced, giving a non-infective inflammation in from 6 to 8 hours. This stimulated healing by fibrosis, killed the tubercle bacilli, and relieved the pain. The rays penetrated only $\frac{1}{10}$ th of a millimetre. Hypertrophic lesions responded better than ulcerative ones, and oedematous types responded least. Only certain cases were suitable. There were two main difficulties: (1) direct current was at present necessary; and (2) an experienced laryngologist must perform the treatment. Dr. Millar then showed records of two cases successfully treated. One mild case healed after weekly exposures for three months. The other, grossly involved, was given weekly treatments for two months and then fortnightly for several months, and eventually the lesion healed completely.

SECTION OF PUBLIC MEDICINE

Sir HENRY GAUVAIN (Alton), president of the section, gave an address on

Sea-bathing

He said that in considering the treatment of surgical tuberculosis, sea-bathing had a very real claim to our consideration. Two pioneers in the therapeutic application of sea-bathing were Lettsom and Richard Russell, generally known as "Seawater Russell"

(1687-1759). In the early part of the eighteenth century Russell wrote two books on the efficacy of sea-bathing and sea-water drinking in the cure of various diseases, especially tuberculosis of glands, bone, joints, and skin. He claimed that his observations had shown that fishermen rarely had scrofulous diseases, and that their women had beautiful complexions, good teeth, and sound gums. The value of the associated sun-bathing seemed to have escaped him. Brighton owed much of its popularity to Russell. As time went on, the pleasures of sea-bathing caused its therapeutic effects to be overlooked. Lettsom, however, impressed by Russell's work, founded the Sea Bathing Infirmary, now known as the Royal Sea-bathing Hospital at Margate. Sir Henry pointed out that the Napoleonic wars gave a great impetus to the search for the cure for tuberculosis in France, and investigations ultimately led to the establishment of the first seaside institution at Berck, followed by numerous others. His own interest in and love of sea-bathing dated from childhood, and he attributed much of the good health he had enjoyed to long summer holidays spent on or in the sea. When he started the Cripples' Hospital at Alton, in 1908, he immediately practised sun treatment on the children under his care. And, later, when a marine beach was secured, sea-bathing was started as a therapeutic measure. The seaside branch at Hayling Island was ideal in situation and climate. The whole success of the treatment depended on the ability of the patient to respond to the strong stimuli supplied. Those who did not possess that ability were not exposed to these stimuli until their powers of response had been fortified and attuned. Cases likely to respond very satisfactorily were children of good constitution who, even if their local lesions caused anxiety, could react well. In his view children over the age of five years, with good digestion, who were doing well, were braced by exposure to cold air, and reacted well to natural stimuli, would almost always do better still at the seaside. Marine treatment offered the readiest means of beneficially influencing basal metabolism, which could be greatly increased. The quickened tissue change affected diseased as well as normal tissues, expediting healing processes. The sense of physical well-being, under the combined action of sun, sea air, and sea-water was very valuable as an aid to cure. Sir Henry outlined the procedure adopted with children during and after the bathe, and described the voracious appetites and the vivacity developed.

Dr. D. B. ROSENTHAL (Melbourne) opened a discussion on the

Incidence of Pleural Effusion in Artificial Pneumothorax

He said that the limitations of the application of artificial pneumothorax (A.P.) in the treatment of pulmonary tuberculosis depended on the stage of the disease, and on complications that might arise due in part at least to the treatment itself. Of these latter, the commonest and the most upsetting to both the patient and the physician was the development of a pleural effusion. The presence of fluid in a pneumothorax space might be attended by no untoward effects, but three undesirable sequelae were recognised. They were (1) great thickening of the pleura, (2) premature obliteration of the A.P. space by organisation of the fibrin in the fluid, and (3) the change of the fluid to pus. Dr. Rosenthal had attempted to assess the various aetiological factors

which might, either singly or together, have played a part in the development of fluid, and advanced the thesis that trauma to the pleura, in one way or the other, was the main provocative cause. Briefly reviewing the reported incidence of effusions, he pointed out that until reports were more carefully standardised, any accurate estimate was impossible. Some observers included small effusions in their figures, whilst others included only those large enough to cover the diaphragm or to require aspiration. The figures submitted by most authorities suggested that pleural effusions occurred in about 50 per cent., and tuberculous empyema in 5 to 10 per cent. of all cases of A.P. Of a series of 629 patients admitted to Gresswell Sanatorium in two years from April, 1933, to April, 1935, 595 were suffering from pulmonary tuberculosis, and 54 received A.P. therapy as part of their treatment. Of these 41 developed effusion—i.e., 76 per cent.; but if one excluded those in whom only a very small "puddle" of fluid formed, the number of effusions of clinical importance was 23—i.e., 43 per cent. of the total.

Each case had been carefully examined by fluoroscopy and by study of the radiogram for adhesions. The occurrence of a febrile reaction at the time of the appearance of each effusion was noted, in an attempt to assess the infective, as distinct from the traumatic, factor in the causation of effusion. These were not mutually exclusive; the presence of pyrexia at the time did not exclude trauma, to which it may have been secondary. It was interesting to note that adhesions of some degree were present in 46 out of the 54 cases. These ranged from fine strands to massive bands holding the lung to the chest-wall over a considerable area. In 4 cases no fluid and no adhesions were found; 4 had fluid and no adhesions; 9 had no fluid but adhesions; and 37 fluid and adhesions. Wide variation was noted—from 1 to 64 weeks—in the period elapsing between the establishment of A.P. and the appearance of fluid. Very small effusion, and those that became purulent—the least and the most important groups respectively—showed a tendency to earlier appearance than did the rest.

The present position of those in the series in whom A.P. was originally established was as follows: 30 were being continued; 7 were abandoned because adhesions prevented satisfactory collapse; 10 discontinued refills because of the presence of adhesions together with pleural effusion; and 7 discontinued refills because of the development of pyothorax. The only deaths in the series were 2 of the 7 cases of empyema.

The various aetiological factors were then considered in turn. Trauma to the pleura might arise from (1) repeated puncture; (2) introduction of a foreign body (including air) into the pleural space; (3) high intrapleural pressures; and (4) rupture of adhesions. Dr. Rosenthal discussed the various types of adhesions, and showed radiograms demonstrating cases of rupture of each type. Depending on the type of tissue involved, the results of rupture might cause a very small effusion, a larger serous effusion, or a purulent effusion. He mentioned that in intentional rupture of adhesions (Jacobaeus' operation) effusion occurred in about 50 per cent. of cases, and empyema in about 10 per cent. He thought that the number of cases of tuberculous infection of the pleura (unassociated with trauma) was small, a conclusion drawn from the mode of onset of the effusions, and from the comparison of the figures from the A.P. group with the "non A.P." group—43 per cent. and 7 per cent.

respectively. Acute exacerbation of disease in the contralateral lung had not been experienced following the appearance of fluid in the A.P. space. If indeed this was frequent, the development of fluid would in itself be an indication for reviewing the treatment. Climatic effect was considered to be of little moment. Recently Pisani and Smejkal had claimed that calcium gluconate was effective in preventing effusion in A.P., but he had been unable to confirm their results. In 16 of his cases of A.P. 8 received calcium and 8 served as controls, the cases being taken alternatively. Of the cases receiving calcium, 1 had no effusion, 5 had a small effusion, and 2 needed aspiration; of the 8 controls, 4 had no effusion, 3 had a small effusion, and 1 needed aspiration. In conclusion, he said that in his view small effusions were due to trauma only, whilst larger effusions were due to trauma plus infection; a relatively small proportion of effusions was due to a tuberculous pleurisy not associated with trauma. He advised conservative treatment, particularly avoidance of "compression" of the lung by use of positive intrapleural pressures. Partial collapse was always "selective," and the best results were obtained by adopting the technique of what had been aptly termed "hypotensive" pneumothorax. The word "compression" should be abandoned in favour of "collapse"; even better was Gravesen's conception of "relaxation" therapy. When air-replacement was practised it should be performed as infrequently as possible.

Dr. A. J. COLLINS (Sydney) said that effusions were not always proved to be tuberculous, even the guinea-pig test being negative. The nature of those effusions which were not aspirated was speculative. He agreed with Dr. Rosenthal that many who developed fluid had adhesions; but this did not necessarily associate the two. He preferred to think of the condition as being due to an extension of tuberculous disease to the pleura. The presence of adhesions certainly indicated past pleurisy. Trauma might cause contusion of the chest wall, and convert a dry pleurisy into a pleurisy with effusion. At the Royal Prince Alfred Hospital the incidence of effusions was about 54 per cent. He agreed that trauma played a very important part in their aetiology.

Dr. D'ARCY COWAN (Adelaide) preferred a dry A.P. He agreed that adhesions were usually present with effusions, and advised gradual alteration in intrapleural pressure, when this was desirable. He also suggested that re-expansion of the lung should be made a gradual process, as rapid expansion might cause effusion. He recommended the more general use of tuberculin in treatment, associated with A.P., but had had no success with calcium.

Dr. J. BELL FERGUSON (Melbourne) regarded effusion in A.P. as a common, worrying complication. He thought the determining factors were the presence of adhesions and high intrapleural pressures. He agreed with the treatment outlined by Dr. Rosenthal. When pus was present, he advocated the use of Metaphen, 1:3000 in olive oil.

Dr. B. ELWELL (Brisbane) spoke of the gravity of effusion complicating A.P. He advised the use of tuberculin with A.P.

Dr. A. WALKER (Sydney) found it difficult to believe that effusions were ever other than exudates. He thought that a large effusion was a somewhat sinister thing, and agreed with Dr. Rosenthal that aspiration should be as infrequent as possible.

Dr. H. WATSON (Melbourne) and Dr. W. J. NEWING (Melbourne) also spoke.

Dr. ROSENTHAL, in reply, desired to emphasise his conviction that most of these effusions were tuberculous, but were precipitated by trauma in some form; they were essentially a result of the nature of the treatment.

Treatment of Tuberculous Empyema

Dr. M. P. SUSMAN (Sydney) said that in discussing this subject it was necessary to lay stress on a commonplace—that we were dealing with a tuberculous patient and not just a local focus. Constitutional treatment was therefore essential throughout—including dietetic, hygienic, and medicinal measures. Each patient required individual treatment. Minor surgical procedures included aspiration, with or without air replacement and irrigation, and oleothorax. Major surgical operations consist of (1) intercostal drainage, open or closed; (2) thoracotomy and drainage; (3) phrenic avulsion, either alone or supplementing other procedures; (4) thoracoplasty, partial or complete; (5) rib resection and excision of granulation tissue and thickened pleura to bring close contact with visceral pleura.

The principles of treatment might be divided into general and special. General measures included (a) the avoidance of secondary infection or, if it occurred, its prompt and adequate treatment to minimise constitutional and local damage; and (b) the relief of symptoms, especially those due to mechanical causes, such as a large collection of fluid or a valvular pneumothorax. Special measures depended on two possibilities: (1) if the underlying lung was apparently healthy, the aim was to obliterate the empyema cavity by getting the lung to expand; (2) if the lung was diseased, and especially if there was cavitation, the pulmonary lesion had to be treated as well as the empyema, so that the aim was to keep the lung collapsed. It was thus clear that treatment was determined by the state of the lung or lungs, and the presence or absence of pyogenic infection. For the purpose of treatment cases could be considered under four groups: (1) no signs of pulmonary tuberculosis and no pyogenic organisms in the empyema; (2) pulmonary tuberculosis known to be present, but no pyogenic organisms in the empyema; (3) no signs of pulmonary tuberculosis, but pyogenic organisms present in the empyema; (4) pulmonary tuberculosis known to be present, and pyogenic organisms present in the empyema. The number of patients in groups 1 and 3 was much smaller than in groups 2 and 4. Dr. Susman detailed the appropriate treatment for each of the four groups describing illustrative cases. In group 1, he said that the important thing was to get the thoracoplasty done if it were necessary before secondary infection occurred. He discussed briefly pleural lavage, oleothorax, intercostal drainage, and thoracoplasty, and reviewed the results of treatment. He believed that the mortality of tuberculous empyema was between 30 and 50 per cent.

Dr. A. WALKER spoke of the gravity of tuberculous empyema. He thought conservative treatment was carried too far, and urged the adequate treatment of pleural effusions before they became frankly purulent. He urged the need for the physician in charge to keep an open mind in respect of treatment.

Dr. H. SEARBY (Melbourne) said that more co-operation between the surgical clinics and the sanatoria without operating facilities was desirable. He did not advise thoracoplasty in group 1 of Dr. Susman's classification. In group 2, if the lung tended to

re-expand whilst treatment was in progress, the condition was self-curative. Group 3 was difficult to treat satisfactorily. Rib resection appeared to give adequate drainage. He advised conservative treatment for months before thoracoplasty, but was pessimistic of the outcome.

Dr. L. DOYLE (Melbourne) thought that the essential factor was to bring the chest wall down to the lung: it was important to induce the correct mental outlook of the patient before surgical treatment was undertaken.

Dr. G. FOREMAN (Melbourne) discussed details of the technique of thoracoplasty. He thought that broncho-pleural fistula was commoner than the figures suggested.

Dr. BELL FERGUSON considered that the physician was sometimes too conservative in treating these cases.

Dr. A. PENNINGTON (Melbourne) referred to his experiences in the bacteriological investigations of these fluids, and Dr. D'ARCY COWAN suggested irrigation of the pleural space by saline as a preliminary measure.

Dr. ROSENTHAL agreed that lavage of the pleural space should be performed first with a bland fluid, such as saline, to which eusol could be added. He thought that oleothorax was frequently responsible for the failure of re-expansion later, and deprecated the use of oil in the presence of broncho-pleural fistula.

In reply, Dr. SUSMAN thought that open drainage was quite safe. If the lung would not expand, he advised early thoracoplasty in group 1. In group 2 there was more doubt. In answer to Dr. Doyle, he said that he considered local anaesthesia unsatisfactory for thoracoplasty.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

MEDICAL CURRICULUM AT EDINBURGH

At a meeting of the general council of Edinburgh University, Principal Sir Thomas Holland spoke of the reform of the curriculum as a matter of considerable public interest. The idea of expecting a man to be a general practitioner in science or engineering, had, he said, long been given up, but the average graduate in medicine—as in divinity—was still expected to be a safe general practitioner. At Edinburgh University a committee has been at work for some time planning reforms in the curriculum and many alterations in the methods of teaching have been made during the past few years. The teaching of physiology, for example, has been greatly changed. The various medical courses are being continually altered in an attempt to keep the school in tune with the changing and developing needs of both medical science and medical practice. An extra year added to the medical course would add 20 per cent. to the student's outlay for a medical degree, which was already expensive compared with that of other professions. A rash attempt to raise the standard to meet the demands of all the teachers would merely defeat the real object all had in view. In view of the limited accommodation in some of the laboratories and in the resources for clinical training at the Royal Infirmary, the university has been unable to accept more than one-half of the applicants who could show the basic educational standard required to undertake a medical training of university degree standard. The applications were now subject to scrutiny by a special committee, and preference was usually given

to those with the higher qualifications. During the session 1934-35, 180 men and 35 women started their medical course, while the total number of matriculated medical students was 1162 men and 166 women. The total number of matriculated students for all faculties was 3991.

The annual expenditure of the university shows little change from year to year. In 1934 it amounted to £294,264. In their report the finance committee reiterate the need of endowment of additional chairs, lectureships, laboratory equipment, library, fellowships, scholarships, and bursaries, and of funds for research and for general maintenance.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE IRISH HOSPITALS SWEEPSTAKE

THE draw of the sweepstake on the Cambridge-shire Race, being the sixteenth sweepstake held in aid of the Irish hospitals, took place last week. Despite gloomy prophecies the total receipts, and consequently the funds to accrue to the hospitals, showed an increase over the previous sweepstake held last June. The amount which will be handed to the National Hospital Trustees as a result of this sweepstake will be over £400,000. The total amount, from the sixteen sweepstakes from November, 1930, to June, 1935, collected for the hospitals was £8,367,002. In declaring the draw open Lord Powerscourt, chairman of the Associated Hospitals Committee, stated that the report of the Hospitals Commission containing recommendations for the disbursement of funds to the hospitals was now in the hands of the Minister for Local Government and Public Health, and it would soon be printed and made public. Until the Minister had time to study and approve the recommendations grants for the carrying out of extensive schemes could not be made. At present, however, the Minister was allowing grants to meet the deficits on the working of certain hospitals. The solution of the main problem, an adequate hospital scheme for the whole country, could not be undertaken until a large sum of money was in hand, and that was why no substantial grants were being made at present. Lord Powerscourt's clear statement should put an end to the suggestions made in certain quarters that the Government was holding up the money for some sinister purpose. The funds are in the hands of trustees, and any moneys not invested in trustee securities are on deposit in the Bank of Ireland.

ROYAL WORCESTER INFIRMARY: CONTRIBUTORY SCHEME.—This hospital has been overhauling the constitution of its contributory scheme in view of the fact that since the extended services of the hospital came into full operation there has been a deficit on the maintenance account of some £3000 per annum. The population served by the scheme is roughly 100,000, of whom about 22 per cent. are members, compared with an average of 28 per cent. in schemes throughout the country. The income thus raised is nearly £10,000 a year as compared with £14,000 a year from the average scheme of comparable size. It was recommended that new rates of contribution and a revised income limit scheme as recommended by the British Medical Association should be adopted whereby adult single members pay 3d. per week instead of 2d.; single persons with an income of more than £200 are excluded, but family men with an income of up to £300 a year are admitted. It is hoped that the changes will bring in another £2000 a year.

CORRESPONDENCE

ATTITUDE OF SURGERY TO HÆMATEMESIS

To the Editor of THE LANCET

SIR,—I have been much interested in studying Mr. Gordon-Taylor's address and his views of the place of surgery in the treatment of hæmatemesis from chronic peptic ulcer. My own views were expressed in a lecture published in *THE LANCET* of August 12th, 1933 (p. 335), but as this is over two years ago they must already be considered out of date. I do not wish to take any part in the statistical battle which is perennially fought out between the results of medical and surgical treatment. It is sufficient to say that my own experience shows that I have probably been fortunate (or, at any rate, that my patients have) for the result has nearly always justified my optimistic prognosis in these cases. But good fortune may not last and one must be prepared for the necessity to trim one's sails to a less favourable wind.

I should like, however, once more to stress two facts with which I hope that most of my colleagues, both medical and surgical, will agree. First, that serious hæmorrhage is a relatively rare complication of chronic peptic ulcer, especially in patients under forty. And, secondly, that acute ulcer is at least as common a cause of hæmorrhage (in my own experience a good deal commoner) as chronic ulcer. A further relevant fact, based on post-mortem study, is that acute ulceration may occur in the presence of chronic ulcer and, where this is the case, any hæmorrhage is as likely (I think more likely) to be due to the acute as to the chronic ulcer. Clinical experience can tell us nothing of the frequency of such hæmorrhages, and, although they have certainly caused death in some cases, they may be quite rare. But the possibility of an acute gastric ulcer causing a hæmorrhage in a patient who is known to have a chronic duodenal ulcer is not mentioned by Mr. Gordon-Taylor; yet it is a possibility which is worth bearing in mind and it has frequently deterred me from advising surgery in cases that have come within the indications which Mr. Gordon-Taylor has laid down.

Mr. Gordon-Taylor briefly mentions having operated on a few acute peptic ulcers but gives no details. Now I have been brought up to believe that the discovery of an acute ulcer at operation is always difficult and often impossible. Experience of autopsies on such cases would certainly support such a view. To me it seems fundamental that there should be no doubt whatever on this score and I should be grateful if Mr. Gordon-Taylor and other surgeons would give us their views on the possibilities of the surgical treatment of bleeding acute ulcers. If I am right in supposing that such a hæmorrhage is not very uncommon even in the presence of a chronic ulcer we can really not be quite certain of Mr. Gordon-Taylor's primary postulate (with which everyone will agree) that "almost the only pathological state which justifies urgent surgery is that of bleeding *from* (my italics) a chronic ulcer." And if surgery becomes more frequent as the result of Mr. Gordon-Taylor's skilful advocacy we may from time to time meet with the experience, not unfamiliar in an earlier age, of a "successful" operation failing to control the hæmorrhage.

In conclusion may I emphasise that I am seeking knowledge and that what I have written is not

intended to imply any criticism of, or fundamental disagreement with, Mr. Gordon-Taylor's extraordinarily able contribution to a problem which closely concerns the physician, the surgeon, and the general practitioner.

I am, Sir, yours faithfully,

London, W., Oct. 26th.

MAURICE E. SHAW.

To the Editor of THE LANCET

SIR,—I quite understand now that the peroration in Mr. Gordon-Taylor's article should be read in conjunction with the more moderate views expressed in the body of his paper, and that the flight of fancy went beyond his opinions and his practice. It is a dangerous latitude in an authoritative article and it is to be hoped that others will not take it literally.

I am sincerely sorry that my letter should have hurt Prof. Finsterer's many friends in this country. I can assure them that I did not intend to impute any lack of integrity when criticising his conclusions and statistics, and I trust that this will be understood. But his conclusions include such statements as "any hæmorrhage from an ulcer is almost as urgent as a perforation," and "operation for acute hæmorrhage gives the same good results as operation for non-bleeding ulcer," and one is entitled to regard critically the author of these sentences. Surely his friends who admire his technique would not follow him in these views. His statistics give 39 cases of severe hæmorrhage in which gastrectomy was performed within 48 hours with one death. There is no indication in his article that these cases were selected, and in view of his opinions quoted above one accepted them as being consecutive unselected cases of severe hæmorrhage. But I hear that Prof. Finsterer is a surgeon who is not attached to a hospital and his cases would have been selected previously by the general practitioners. Physicians may see in their practice a series of cases of severe hæmorrhage without a death, but they know that fatalities occur in their hospital wards. In referring to Prof. Finsterer's statistics the circumstances to which they apply should be made clear. If surgical technique can uniformly achieve these results in all cases of ulcer-hæmorrhage, why has it not done so? Then the problem would have ceased to exist.

The fatalities from ulcer-hæmorrhage are practically confined to a small group of cases. I believe that in recent years these cases have not been operated upon sufficiently often, or sufficiently early, but this must not be corrected by operating too widely. It is our duty now to attempt to recognise these cases and to recognise them as early as possible. It only partly solves the problem to wait for indications of the persistence of copious bleeding. Altogether it is clearly necessary that severe ulcer-hæmorrhage should be studied afresh.

I am, Sir, yours faithfully,

H. LETHEBY TIDY.

Devonshire-place, W., Oct. 28th.

PROTEIN SHOCK FOR UNDULANT FEVER

To the Editor of THE LANCET

SIR,—I have read with interest the notes of the case of undulant fever treated by protein shock, reported by Dr. Beaumont and Dr. Page in your last issue. The severity of the reaction produced by a T.A.B. vaccine injection intravenously is largely a question of dosage. In the series of cases of undulant

fever treated by protein shock therapy which I reported in THE LANCET of June 3rd, 1933 (p. 1177), the initial dose of the T.A.B. vaccine was generally 50 million organisms, though in special cases the dose was as low as 20 million. In none of these had I any serious upset.

Since then I have continued to use protein shock therapy regularly in cases of undulant fever coming under my care. In a series now of over twenty treated with varying doses of T.A.B. vaccine I have had no reactions of an alarming nature and the results have been consistently good. I feel confident that with due caution in dosage protein shock therapy can be used with great advantage in the routine treatment of cases of undulant fever without causing undue anxiety.

I am, Sir, yours faithfully,

SINCLAIR MILLER.

Harrogate Investigation Clinic, Oct. 28th.

A PECULIAR BODILY DISPROPORTION

To the Editor of THE LANCET

SIR,—Whilst I am not in a position to express an opinion comprising the general population in respect to the "peculiar bodily disproportion" about which Dr. Piney is solicitous, I can at any rate refer to the results of some 25 years' investigations of a special character which have some bearing on the subject. Together with their physiological capabilities, the anthropometry of athletes has engaged my attention and in the whole of my experience I have not seen a single example in whom the leg length was not more than 50 per cent. of the total body length. In the case of track athletes, the disproportion—to use Dr. Piney's term—is generally considerable; and even in the case of long-distance cyclists who have relatively short lower limbs the relation is still maintained.

So far I know of no example of a death under an anæsthetic having occurred in any one of this considerable number of young men with whom I have been acquainted; nor, although suicidal potentiality or mental instability cannot, I suppose, be excluded, have I heard of one example of felo de se or of admission to a lunatic asylum.

I am, Sir, yours faithfully,

Brook-street, W., Oct. 26th. ADOLPHE ABRAHAMS.

THE WAR MENTALITY

To the Editor of THE LANCET

SIR,—The appearance in your issue of Oct. 19th (p. 907) of the letter addressed to the statesmen of the world from the committee for war prophylaxis of the Netherlands Medical Association must have pleased a great many members of our profession. At the present time, when the international situation is fraught with such grave possibilities, it is the plain duty of each and every sane human being in the world to do his or her bit in the cause of peace.

As a profession we are pledged to the alleviation of suffering and the saving of life, and at a time when the whole trend of medical science is in the direction of preventive therapy, a situation has arisen which bids fair to threaten the lives of vast numbers of our species and the health of countless more. Surely this is a position in which the medical profession can and should take a strong stand. The education of the people is the surest way to peace, and here we are in a peculiarly privileged position in the face of that confident intimacy which exists between doctor and patient, extended as is

so often the case to the patient's relatives and friends. Here we have the opportunity for propaganda of the most useful type, in which we can do our share in bringing about an enlightenment of the people as a whole.

One would like to see some such body as the committee for war prophylaxis set up in this and in other countries, and one would like to see the churches and the schools combine with such bodies in a common effort to bring the peoples of the world as individuals and as groups to a sane outlook on international affairs and a resolute expurgation of the idea of war as an instrument of economic or of political negotiation.—I am, Sir, yours faithfully,

Ashwell, Herts, Oct. 23rd.

J. H. MOYNIHAN.

ASSOCIATION OF INDUSTRIAL MEDICAL OFFICERS

To the Editor of THE LANCET

SIR,—I shall be obliged if you will allow me to correct certain misconceptions that have arisen in connexion with the announcement sent to you, and published in your issue of Oct. 5th (p. 808), concerning the formation of the Association of Industrial Medical Officers. It was not intended to imply, nor was it stated, that this association replaces and continues the work of the advisory medical committee of the Industrial Welfare Society, for both bodies have sprung from the original membership of the pre-existing Council of Industrial Medicine. It was incorrect to state that the members of the association "continue to constitute" the advisory committee, for though many of the members of the former, including myself, have been members of the latter since its formation and continue to give their services to it, the advisory committee contains also a number of other medical practitioners whose interest in industrial medicine is of a more general or less active nature. The committee of the Industrial Welfare Society is largely an advisory body, whereas this association exists for mutual study and research, and its membership is limited to those actively engaged in industrial medicine. Close coöperation between the two bodies has been arranged.

I am, Sir, yours faithfully,

London, Oct. 24th. N. HOWARD MUMFERY,
Chairman, A.I.M.O.

GERMICIDAL PROPERTIES OF MERCURY PREPARATIONS

To the Editor of THE LANCET

SIR,—In your issue of Oct. 19th (p. 917) Drs. Reynolds and Stothart draw attention to a real weakness in the technique of determining germicidal efficiency. It so happens that this matter is the subject of a paper by us accepted on Sept. 3rd for publication in the next issue of the *Journal of Hygiene*. Therein we believe the true explanation is given, based on colloid-chemical considerations.

We are, Sir, yours faithfully,

London, Oct. 24th. JOHN GEORGE BAUMGARTNER,
MALCOLM DOUGLAS WALLACE.

TONBRIDGE COTTAGE HOSPITAL.—On Oct. 23rd Lady Camden opened the new Queen Victoria Cottage Hospital at Tonbridge. It consists of the buildings of a vacated isolation hospital which have been modernised. The estimated cost of the whole scheme is about £18,000, of which £5000 still has to be raised.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Prorogation and Dissolution

PARLIAMENT was prorogued by Royal Commission in the House of Lords on Oct. 25th until Nov. 19th, and the same night a Dissolution was announced by a Royal Proclamation issued as a supplement to the *London Gazette*. Thus came to an end the Parliament which was elected in October, 1931, with an enormous majority for the National Government. As announced by the Prime Minister (Mr. Baldwin) in the House of Commons on Oct. 23rd, the nomination of candidates in the forthcoming General Election will take place on Monday, Nov. 4th, and the poll on Thursday, Nov. 14th. The new Parliament will meet for the first time on Nov. 26th for the election of a Speaker and the swearing-in of Members. The State opening of Parliament will be on Dec. 3rd.

Dependent Children—Increased Allowances

In the House of Commons on Oct. 24th Mr. ERNEST BROWN, Minister of Labour, moved that the draft of the Unemployment Insurance (Increase of Benefit in respect of Dependent Children) Order laid before Parliament on Oct. 22nd be approved. The Statutory Committee, which was charged with looking after the destinies of the Insurance Fund under Part I. of the Act of 1934, had, he said, made to him a report. The report considered the condition of the fund. The fund was solvent, there was a certain reserve, and the committee, surveying the whole trend of events, had, after casting a mean of eight years in succession, come to the conclusion that, allowing for a certain figure of standard reserve, there was a disposable surplus of nearly £1,500,000. They recommended that the dependents' insurance benefit to children under Part I. of the Act should be raised from 2s. to 3s. This would affect on the average 240,000 households weekly and an average weekly number of children to the extent of 500,000. The committee had laid down a proviso that there should be an over-all limit of 41s. That limit was unique in the insurance system. The other point, which was perhaps just as important from the point of view of a consideration of policy, was that not only should there be this over-all limit, but there should be an actual figure expressed—namely, 41s. The effect of this would be twofold. At the moment there were a small number of households with very large families which got more than 41s. a week. Some drew as much as 46s., so that if the proviso had been accepted by the Government, if he had not put in an order disagreeing with the proviso, it would have meant an actual cut to a small number of large families of anything up to 5s. In the second place, if the "stop" was at 41s. there would not be the full allowance to the larger families. The 41s. level was struck at a family consisting of five children or more. He had figures showing how the scale would work out in the case of families of more than five without the proviso. This would be the new rate as compared with the old: man and wife and one dependent child, old rate 28s., new 29s.; man and wife and two dependent children, old rate 30s., new rate 32s.; man and wife and three dependent children, old rate 32s., new rate 35s.; man and wife and four dependent children, old rate 34s., new rate 38s.; man and wife and five dependent children, old rate 36s., new 41s.; man and wife and six dependent children, old rate 38s., new 44s.; man and wife and seven dependent children, old rate 40s., new rate 50s.; man and wife and nine dependent children, old rate 44s., new rate 53s.; man and wife and ten dependent children, old rate 46s., new rate 56s. It was estimated that the families under the scheme above the five children level numbered some 10,000 and that above eight there were some 1000 families. The committee in their report did not

urge the principle of the over-all limit on financial grounds. The 10,000 families with over five children and the 1000 with eight children would make no substantial difference to the financial arrangements. The committee urged it on very grave grounds of public policy. The Government had disagreed with the proviso without in any way deciding for or against the general issue which the committee raised. They had come to the conclusion that that issue, as an issue, should be left open for further consideration, and they had therefore decided not to accept the committee's recommendation that there should be a limit of 41s. on the amount of benefit paid in any individual case. He proposed that the new scale should take effect from Oct. 31st, and the first payments would be made on Nov. 7th and 8th. The motion approving the order was agreed to.

Departmental Committee on Workmen's Compensation

In the House of Commons on Oct. 24th Mr. GEOFFREY PETO asked the Home Secretary the names of the committee on the operation of the Workmen's Compensation Act in relation to the settlement of claims by the payment of lump sums, the position of medical referees, miners' nystagmus, and other matters. In reply Captain WALLACE gave the following list of the names of the committee and the terms of reference:—His Honour Judge Stewart (Chairman); Mr. H. E. Allen (Secretary of the North Wales Coalowners' Association); Mr. R. R. Bannatyne, C.B. (Assistant Under-Secretary of State, Home Office); Dr. J. C. Bridge, C.B.E. (Senior Medical Inspector of Factories); Dr. J. Gilmour (Regional Medical Officer, Department of Health for Scotland); Mr. F. Holroyd, J.P. (Senior Vice-President, National Confederation of Employers' Organisations); Mr. Joseph Jones, C.B.E., J.P. (President, Mine Workers' Federation); Mr. W. Kean, J.P. (General Secretary, National Union of Gold, Silver, and Allied Trades); and Sir Walter Kinnear K.B.E. (Controller, National Health Insurance Department, Ministry of Health). The terms of reference were given as follows:—"To inquire into the arrangements at present in operation with a view to the restoration of the working capacity of persons injured by accidents, and to report as to what improvements or developments are desirable, and what steps are expedient to give effect thereto regard being had to the recommendations made in the report issued by the British Medical Association in February, 1935, on 'Fractures'."

HOUSE OF COMMONS

WEDNESDAY, OCT. 23RD

Ex-Service Men and Hospital Treatment

Sir P. HARRIS asked the Minister of Pensions whether it would require legislation in order to give the promised concession to ex-Service men entering hospitals, or whether it could be carried out by administrative action, and, if so, from what date would such action become operative.—Major G. F. DAVIES, Lord of the Treasury, replied: No legislation will be necessary. The concession will take effect as soon as the necessary instructions can be got out, which should be within the next ten days.

THURSDAY, OCT. 24TH

National Health Insurance and Maternity Benefit

Mr. BUCHANAN asked the Minister of Health if he was aware that great hardships had been caused among numbers of households where the father had been out of work for some time and he had not a certain insurance record, and, as a result, had lost his title to maternity benefit; and if he would take steps to have this benefit granted to all, despite the period of unemployment.—Sir KINGSLEY WOOD replied: I am aware that cases have arisen in which title to maternity benefit has been lost by reason of prolonged unemployment, but the hon. Member will recall that in the National Health Insurance

and Contributory Pensions Act of the present session provision was made under which the title to maternity benefit will no longer cease with the expiration of the free insurance period but will be retained so long as insurance is continued on proof of prolonged unemployment. Further, the provision in the Act under which arrears due to unemployment are in future to be completely excused will prevent any reduction of maternity benefit by reason of unemployment.

Electric Welding and Health of Workers

Miss WARD asked the Home Secretary whether, in view of the use of electric welding as an industrial process, consideration had been given to the question of the effect on the health of the workers so engaged.—Captain WALLACE, Under-Secretary, Home Office, replied: Certainly, and steps have been taken with a view to preventing injury to health. I may refer in this connexion to Number 18 of the Shipbuilding Regulations under the Factory Acts, requiring adequate ventilation, and to the Factory Department Memorandum (Form 329) on Electric Arc Welding.

Spahlinger Bovine Vaccine

Mr. PETHERICK asked the Minister of Agriculture if he had received a report on the tests of the Spahlinger treatment of tuberculous cattle carried out by His Majesty's Government in Northern Ireland, and if he could make a statement regarding his intentions in relation thereto.—Major DAVIES replied: My right hon. friend has read the report with much interest. It is now being examined by the Committee on Tuberculosis appointed jointly by the Medical Research Council and the Agricultural Research Council. The views of the committee in detail will not be available for some days, but it is understood that they will probably recommend that, arising out of the report, further investigations should be undertaken in Great Britain. Any such recommendations will be promptly and sympathetically considered by my right hon. friend.

Drunkenness Statistics

Mr. ISAAC FOOT asked the Home Secretary the number of proceedings and convictions for drunkenness in England and Wales during the calendar year 1934.—Sir JOHN SIMON replied: The figures of proceedings and of convictions for drunkenness in England and Wales during 1934 were, respectively, 46,293 and 39,748.

Pensioners and Health Insurance

Sir MERVYN MANNINGHAM-BULLER asked the Minister of Pensions if he was aware that pensioners, in some instances, through ignorance or neglect, failed to maintain or make certain of their position in health insurance and so lose or endangered their title to benefit and contributory pension; and whether he would take steps to enable them to ascertain or establish their rights.—Mr. R. S. HUDSON replied: Yes, Sir. Cases of the kind referred to have come to my notice. I am glad to say that with the co-operation of my right hon. friend the Minister of Health special arrangements have now been made to meet them as far as possible. For this purpose pensioners who are in any doubt as to their position in health insurance will be invited to communicate full particulars of their cases to the chief area officers of my department by whom they will be placed before the Ministry of Health. Special notices are being sent out, and in addition instructions will be given to each pensioner in his pension book.

Pensioners and Hospital Treatment

Sir MERVYN MANNINGHAM-BULLER asked the Minister of Pensions whether he was aware that many pensioners who had lost regular work through having to undergo treatment for their war disabilities in hospital were anxious to know, after a long stay in hospital, if they would be able on discharge to regain employment; and whether he could arrange with the Ministry of Labour to assist them to regain employment.—Mr. R. S. HUDSON replied: Yes, Sir; and I am glad to say that with the help of my right hon. friend the Minister of Labour, arrangements have been made whereby on receipt of a form of registration from a patient who is about to be discharged from hospital, the employment exchange nearest to his home will take all possible steps to secure

his prompt return to employment, either with his former employer or otherwise. I may add that I have issued a circular (copies of which have been placed in the library) to all war pensions committees throughout the country calling for special attention to the points raised in this and the last question, and inviting their active co-operation.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Vice-Admiral Sir Reginald Bond has been awarded a Good Service pension of £100 a year, from Sept. 23rd. in the vacancy created by the death of Surg. Vice-Admiral Sir Joseph Chambers.

Surg. Lt.-Comdr. T. F. Crean to *Pembroke* for R.M. Infirmary, Deal; E. R. Sorley to *Pembroke* for R.N.B.; and J. G. Currie to *Ganges* for R.N. Sick Quarters, Shotley.

Surg. Lt.-Comdr. (D) T. Hunt to *Victory* for R.N. Hosp., Haslar.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. K. W. Martin to *Victory* for R.N. Hosp., Haslar.

Proby. Surg. Lt. W. J. Heely to *Curacao*.

Proby. Surg. Sub-Lt. R. F. Hand to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS

Capt. N. H. Lindsay is placed on the half-pay list on account of ill-health.

Short Serv. Commissions: Lts. (on prob.) L. C. Card and H. C. George are confirmed in their rank.

REGULAR ARMY RESERVE OF OFFICERS

Col. L. M. Purser, D.S.O. (late R.A.M.C.), and Lt.-Col. G. S. Parkinson, D.S.O., having attained the age limit of liability to recall, cease to belong to the Res. of Officers.

SUPPLEMENTARY RESERVE OF OFFICERS

H. D. K. Wright to be Lt.

TERRITORIAL ARMY

Maj. C. Russell, M.C., M.B., R.A.M.C., to be Divl. Adjnt., 54th (E. Anglian) Div., vice Maj. W. Shakespeare, vacated.

Capt. R. G. Addenbrooke and R. E. Holme to be Maj. s.

Capt. A. G. Bryce, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

T. H. Dockrell to be Lt.

ROYAL AIR FORCE

Squadron Leaders H. McW. Daniel to No. 3 Flying Training School, Grantham, for duty as Medical Officer, and E. N. H. Gray to No. 5 Flying Training School, Sealand, for duty as Medical Officer.

R. A. Cumming is granted a short service commission as a Flying Officer for three years on the active list.

INDIAN MEDICAL SERVICE

Lt.-Col. A. J. H. Russell, C.B.E., M.D., I.M.S., Honorary Surgeon to the Viceroy of India, has been appointed Honorary Surgeon to the King, with promotion to the rank of brevet colonel, in succession to Col. C. A. Gill, I.M.S., who has retired.

The official notification of Oct. 18th, 1929, regarding the retirement of Capt. (now Maj.) J. C. Drummond is cancelled.

Indian Medical Department.—Capt. (Sen. Assist. Surg.) G. F. Duckworth retires, on account of ill-health.

DEATHS IN THE SERVICES

Lt.-Col. RALPH HENRY MADDOX, C.I.E., I.M.S. (ret'd.), who died on Oct. 18th at Hove, aged 71 years, was son of Rev. R. H. Maddox, rector of Kirkheaton, Yorks. He was educated at Haileybury and Edinburgh, where he qualified in 1887. He entered the Indian Medical Service five years later, served with the Waziristan Expedition, gained the Egyptian medal at Dongola, and was present at the capture of the Sempahga Pass. In 1899 he was appointed deputy sanitary commissioner of Bengal, and later superintendent of jails. He was transferred to Bihar and Orissa in 1912, took part in the European war from 1916-18, and was created C.I.E. in 1919. He occupied the post of inspector-general of civil hospitals in 1921, and retired in 1922. He married Lucy Lillian, daughter of Mr. Walter Wheeler of Belfast.

PANEL AND CONTRACT PRACTICE

London Insurance Committee and its Personnel

At its annual meeting on Oct. 24th the London Insurance Committee appointed Dr. E. A. Gregg as its chairman for the ensuing year. This is the first time for an insurance practitioner to hold this office; the only previous medical chairman (1929-30) was Mr. T. B. Layton, the otologist. The meeting was attended by the Minister of Health, who is the senior surviving ex-chairman. Sir Kingsley Wood was accompanied by Sir George Chrystal, the new permanent secretary of the Ministry, and by Mr. H. A. de Montmorency, an assistant secretary; and but for an urgent engagement elsewhere Sir Edward Campbell, Parliamentary private secretary to the Minister, who is also a former member of the committee, would have been present. Sir Kingsley, in a happy address, contrasted the position to-day with that when he was chairman eighteen years ago. The increase in the cost of drugs he attributed partly to the increase in the insured population, partly to the development of new and expensive forms of treatment. The cost per head in England was some 58 per cent. above that in Scotland; England was, he feared, in danger of becoming a nation of confirmed medicine drinkers; he would prefer to see people drinking more milk and less medicine.

An Employer's Complaint

"We cannot complete this report without saying that the employer's communications were characterised by an amount of prejudice and lack of balance which is happily rare in these cases, and were not free from a certain disingenuousness. He was impatient of any kind of impartial or judicial investigation into the practitioner's conduct, and when afforded an opportunity of attending the hearing peremptorily refused to do so."

So runs the last paragraph of a report of the medical service subcommittee upon a case in which a practitioner was cautioned as to the need for greater care in future and, with her partner, is to be called upon to rearrange her surgery hours to the satisfaction of the committee.

An insured person, who had been ill for about a week but had not seen her doctor, called with a friend at Dr. A's surgery early on a Thursday evening, when Dr. A had no surgery hour. Dr. A was out, but her partner (Dr. B) was seeing patients

in the surgery by appointment. The two girls spoke to Dr. B, who was seeing another patient out, and inquired whether the doctor could see them, but she told them she was seeing patients only by appointment that evening, and the patient construed this as an indication that the doctor would not provide her with treatment. Dr. B was hurrying to finish her surgery work in order that she might attend an urgent call, and while it was made clear to her that the applicant was an insurance patient she did not appreciate that the girl was in need of urgent attention and did not question the patient as to her condition. The patient and her friend said they mentioned the existence of a mammary abscess, but the doctor could not remember hearing any reference to it. The friend suggested their applying to a hospital for treatment and in this suggestion Dr. B, unwisely as it turned out, acquiesced. The patient was admitted to hospital and operated upon the same evening.

Thus there were extenuating circumstances in a case which when raised by the employer looked a very bad one. On the one hand a doctor anxious to get away to an urgent case; on the other a patient who failed to impress upon the doctor that she needed immediate treatment, although she was in pain. The subcommittee pointed out that they had always taken the view that while it is the duty of an insured person to indicate, where possible, whether treatment is required urgently there is also an onus upon the doctor to elicit as much information as possible in order to decide whether treatment is urgently necessary. They thought that Dr. B committed an error of judgment in dealing with the case as she did, and that as a result there was a failure to provide treatment for an insured patient, and consequently that Dr. A had failed, as the result of the action of her partner, to comply with the terms of service. The subcommittee added, however, that while they had no alternative on the facts but to find that there was a failure to provide treatment, they were satisfied by the frank and sympathetic bearing of Dr. B that this was an isolated error of judgment attributable to her anxiety to visit another case which she knew to be urgent.

But what a lot of trouble might have been saved if the girl had sought medical advice earlier instead of waiting until surgical interference was urgently necessary.

PUBLIC HEALTH

Vital Statistics of 1934

In his Statistical Review of England and Wales for 1934¹ the Registrar-General has to tabulate nearly half a million deaths and some 600,000 births, and to produce from this prodigious mass of material tables which provide for the wants of both national and local authorities, as well as for the exacting needs of the medical statistician and of social workers. From this task he emerges, as usual, triumphant, condensing a wealth of detail into what is—considering the material set out—an astonishingly small space. In the current volume a minor but valuable innovation has been introduced. In previous issues Table 17 has included the crude death-rate for each administrative area of the country—county, county borough, urban and rural district. In view of the

well-known fallacies involved in the comparison of crude rates, these particulars are insufficient to allow the local patriot to compare the mortality experience of his own area with that of other areas. To this table the Registrar-General has now added a standardising factor for each area (or comparability factor, as he terms it) so that by a simple multiplication of the crude rate by this factor the standardised death-rate is reached, and differences in the age-constitution of the populations thus overcome. This addition should prove of considerable service. On the whole, the national figures for 1934 are very favourable. The standardised death-rate from all causes was 10.4 per 1000 for males and 8.3 for females, rates which are both below any that have been previously recorded. Comparison of 1934 with the experience of 1921-30 shows that this advantage of the former year lay mainly in its first quarter, to which the relative absence of influenza must have

¹New Annual Series, No. 14. Tables. Part I.: Medical. 1935. 6s. net.

largely contributed. Of the last dozen years only 1930 has had an equally low death-rate from this cause. Other respiratory causes—bronchitis and broncho-pneumonia—were also somewhat low, while respiratory tuberculosis continued its decline and, in fact, touched another low record—586 deaths per million compared with a level of 721 in 1926–30 and 1208 in 1901–05. Infant mortality also fell below any previously recorded level and for the first time entered the “fifties,” the rate being 59 deaths per 1000 live births. That substantial improvement is still possible is suggested by the differences that may be observed between various parts of the country. In 1934 the rate varied from 49 per 1000 in the east and south-west to 66 in the north and 64 in Wales; from 53 in the rural districts to 66 in the county boroughs and 67 in London administrative county. Rather more than half the infant mortality in the country as a whole fell, in 1934, in the first four weeks of life, but even at this period considerable geographical variations exist, the rate for London being peculiarly low. Examination of the death-rates at ages shows that the favourable position of 1934 compared with the last quinquennium, 1926–30, extended to every age-group with the single exception of the years 5–10 at which the rate was unchanged. The absence of decline at these ages is no doubt due in part to the prevalence of scarlet fever and diphtheria in the current year. The death-rate from the former at ages under fifteen was 83 per million as compared with 55 in 1926–30 (both, of course, trifling compared with the figure of 366 in 1901–05 and 2018 in 1871–75); the death-rate from diphtheria in childhood was higher than in any year since 1921, being 402 per million under fifteen years of age compared with 306 in 1921–30. Of other epidemic diseases measles produced a normal, and whooping-cough a rather below normal, death-rate, while the epidemic of cerebro-spinal fever which reached its peak in 1931 continued its somewhat slow decline. From typhoid fever a small residue of deaths still remains—159, or 4 per million inhabitants, in 1934 compared with a rate of 13 ten years ago. The standardised death-rate from cancer has shown no significant change since 1925.

Out-patients at L.C.C. Hospitals

Ever since the large poor-law hospitals in London were appropriated by the London County Council certain groups of cases have been attending for out-patient examination and treatment. In general these attendances have been limited to emergencies, the after-care of in-patients, persons entitled to outdoor medical relief, and women attending maternity clinics. For reasons which it is not difficult to divine it has not proved possible to confine out-patient treatment strictly to these classes. Certain poor-law hospitals had already been doing rather more, and the growing reputation of the L.C.C. hospitals since the transfer has led to an increasing resort to them for ambulatory treatment. It is now proposed to extend this treatment to other groups. A patient sent by his own medical attendant for consultation or special examination (X rays, laboratory investigation) will be accepted on an almoner's report that he is unable to obtain for himself the special advice or investigation required. A patient, whether applying on his own or his doctor's initiative, may receive immediate treatment, but shall continue to attend only if the hospital is satisfied that he cannot be adequately treated by his own doctor (or by a district medical officer if he has no doctor of his own)

and if the almoner is satisfied that he cannot obtain for himself the required treatment. Should these conditions not be fulfilled the patient is to be referred to his own doctor or to the district medical officer. The appointment of almoners to L.C.C. hospitals has made it possible to ensure that this information is available. The new policy has the approval of the voluntary hospitals committee for London.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 19TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2969; diphtheria, 1237; enteric fever, 29; acute pneumonia (primary or influenzal), 646; puerperal fever, 41; puerperal pyrexia, 116; cerebro-spinal fever, 14; acute poliomyelitis, 23; acute polio-encephalitis, 2; encephalitis lethargica, 5; dysentery, 23; ophthalmia neonatorum, 90. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 25th was 3052, *v.* fever, 1089; diphtheria, 1197; measles 263; puerperal fever, 16 mothers (plus lethargica, 266; poliomyelitis, 16. At there were 22 babies (plus 11 mot) neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox or enteric fever, 13 (0) from measles, 4 (0) from scarlet fever, 11 (2) from whooping-cough, 25 (3) from diphtheria, 51 (15) from diarrhoea and enteritis under two years, and 24 (3) from influenza. The figures in parentheses are those for London itself.

Measles proved fatal in 5 cases at Manchester, 4 at Middlesbrough, and 2 at Bootle. Liverpool reported 3 deaths from diphtheria; Portsmouth, Salford, Birmingham, and Worcester each 2. Liverpool had 8 fatal cases of enteritis, St. Helens 3, no other great town more than 2.

The number of stillbirths notified during the week was 237 (corresponding to a rate of 36 per 1000 total births), including 48 in London.

OBITUARY

IAN DISHART SUTTIE, M.D., F.R.F.P.S. Glasg.

Dr. Suttie, whose death last week came as a blow to his friends, was well known in London for his work at the Institute of Medical Psychology, where he and his wife had both been on the staff for many years. Son of Dr. William Suttie, an Edinburgh graduate practising in Glasgow, he was born there in 1889, studied at the university, and took his medical degree in 1914. Then for five years he was on war service in France, India, and Mesopotamia, on his return joining the staff of the Glasgow Royal Asylum at Gartnavel where he met Dr. Jane Isabel Robertson who became his wife. For a time he was medical superintendent to the criminal asylum at Perth, an appointment which he gave up when he came south to join the Tavistock Clinic, as it then was. Dr. Suttie described himself as a sociologist and his writings, which appeared mostly in mental and neurological journals, dealt with such subjects as the significance of the sexual instinct, the psychopathic inheritance, the herd instinct, and mental recapitulation. His last book,¹ which has only just appeared, is a critical study of the Freudian psychology in its social application. In his preface to this book Dr. J. A. Hadfield remarks on the

¹ The Origins of Love and Hate. London: Kegan Paul, Trench, Trubner and Co., Ltd. Pp. 275. 10s. 6d.

objective basis of the work recorded, which is its distinctive feature. The starting point of Dr. Suttie's conception of human life and development is the need for companionship, and upon this need he founds his conception of love and his insistence upon this factor as against the Freudian theory of sex; his views of religion are matriarchal in contrast to the patriarchal view of Freud. The book correlates the author's life study of psychology, sociology, and anthropology.

CHARLES FREDERICK RUMBOLL, M.D. Durh.

Dr. Rumboll, who died at Melksham, Wilts, on Oct. 23rd, was born at Calne in 1859, the son of

Charles L. Rumboll of Bedford. Educated at Epsom College, he entered St. Bartholomew's Hospital from which he qualified in 1882. He then took medical degrees at Durham University and in 1886 qualified for the gold medal in the M.D. He was in practice at Melksham for over 40 years and was surgeon to the cottage hospital and local friendly societies. Having become a barrister-at-law of the Inner Temple, he was appointed to the commission of peace and later deputy lieutenant for the county. For many years he served in the 2nd Wilts Volunteers, retiring with the rank of lieutenant-colonel. Dr. Rumboll married Edith, daughter of W. H. Cross, J.P. for Middlesex, who survives him without issue.

MEDICAL NEWS

University of Oxford

Dr. John Mellanby, professor of physiology in the University of London, at St. Thomas's Hospital, has been appointed to the Waynflete chair of physiology in the University of Oxford.

Born at West Hartlepool in 1878, Prof. Mellanby is the younger brother of Prof. Alexander Mellanby of Glasgow, and the elder brother of Prof. Edward Mellanby, F.R.S., secretary of the Medical Research Council. He was educated at Barnard Castle School, Emmanuel College, Cambridge, and the Manchester Royal Infirmary. After leaving Cambridge in 1902 he worked at the Wellcome Research Laboratories at Herne Hill. There he started the physiological laboratory, and for two years carried out investigations on biological methods of standardisation and the isolation of diphtheria toxin and antitoxin. He qualified in 1906, gaining the Raymond Horton-Smith prize for his M.D. thesis at Cambridge in 1907. After qualification he held the George Henry Lewes studentship at Cambridge, and devoted himself to physiological research on the coagulation of blood. He was appointed head of the department of physiology at St. Thomas's Hospital medical school in 1909, and was given the title of professor by London University in 1920. In 1929 he was elected a fellow of the Royal Society in recognition especially of his studies on the coagulation of blood and the mechanism of pancreatic secretion. He was editor of *Physiological Abstracts* from 1925 to 1935, and has acted as examiner at the Universities of Cambridge, Oxford, Leeds, and Sheffield, and for the diplomas of the Royal College of Surgeons.

University of Cambridge

Dr. Thomas Shirley Hele, lecturer in biochemistry in the University, has been elected master of Emmanuel College.

An entrance scholarship has been founded at Peterhouse which is restricted to candidates who intend to study medicine. It may be awarded for proficiency in mathematics, classics, natural sciences, or history. Further particulars will be found in our advertisement columns.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery.—C. N. Chowdary, Univ. of Durh.; P. D. Lynch, Guy's Hosp.; W. J. Pinto, Univ. of Madras; M. Q. H. Siddiki, Univ. of Leeds; and G. W. van Mentz and G. M. Williams, London Hosp.

Medicine.—R. H. Bembridge, King's Coll. Hosp., and A. Morgan, Univ. of Manch.

Forensic Medicine.—R. H. Bembridge, King's Coll. Hosp.; E. R. Jones, St. Mary's Hosp.; A. Morgan, Univ. of Manch.; and G. M. Williams, London Hosp.

Midwifery.—H. Burrows, Univ. of Manch.; E. M. Craggs, Middlesex Hosp.; F. J. H. D. de Marigny, Guy's Hosp.; M. G. H. Jones and J. R. Roeyn-Jones, Welsh National School of Medicine; M. Q. H. Siddiki, Univ. of Leeds; H. L. W. Sixsmith, Welsh National School of Medicine; R. L. Wahmsley, Univs. of Camb. and Leeds; and C. W. Williams, Welsh National School of Medicine.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery: C. N. Chowdary, E. M. Craggs, A. Morgan, and W. J. Pinto.

Lectures for School Medical Officers

Two lectures for school medical officers on the diagnosis of congenital syphilis will be given by Dr. David Nabarro at the Hospital for Sick Children, Great Ormond-street, London, W.C., on Monday and Tuesday, Nov. 18th and 19th, at 2.30 p.m.

Royal College of Physicians of London

A Leverhulme scholarship of the annual value of £500 will shortly be awarded by the College. The scholar must undertake the investigation of some problem of disease in any branch of medicine. Further information will be found in our advertisement columns.

University of London

The title of emeritus professor of bacteriology in the University has been conferred on Dr. J. W. H. Eyre, formerly professor of bacteriology at Guy's Hospital medical school. Dr. Alexander Haddow has been reappointed Laura de Saliceto student.

University of Reading

At a congregation to be held on Dec. 2nd, when Sir Austen Chamberlain will be installed as Chancellor, the honorary degree of D.Sc. will be conferred on Sir Gowland Hopkins, O.M., P.R.S. Other recipients of honorary degrees will include Monsieur Herriot, Sir Robert Vansittart, Lord Rutherford, O.M., and Sir Joseph J. Thomson, O.M.

Scottish Conjoint Board

At recent examinations of the conjoint board of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow the following candidates were successful:—

L.R.C.P., L.R.C.S., AND L.R.F.P. & S.

M. R. Schleifer, S. H. Harrison, M. B. Spiegel, I. J. G. Morat, Joseph Freeman, Harry Farber, Louis Schmullian, Johannes Hart, M. W. U. Alwi, John Orr, S. J. Lederman, George Boyd, T. R. Murphy, Ruth Schurer, C. S. Parker, Hugh Henderson, H. T. Rachlin, D. H. Abbott, Marta Adolfsson, Louis Landman, David Simon, M. S. Hendriks, R. O. Walker, P. S. Gorla, G. B. Shirlaw, Sarah L. Mulholland, Otto Moses, Willi Straus, C. J. Greenberg, A. E. Thompson, W. F. M. Unger, F. P. Perera, O. W. Nardesio, D. S. Abeyagunawardene, John Jamieson, Abraham Berkow, Thomas Miller, J. E. Heller, Herbert Levy, Karl Melzer, Ralph Coff, H. G. Garas, Frances Hunter, Sanmugan Rajendram, Beate Isserlin, Solomon Maranov, Ferenc Kellermann, and M. J. Philip.

Tuberculosis Association

A meeting of this association will be held at Manson House, 26, Portland-place, London, W., on Friday, Nov. 22nd, at 5.15 p.m., at which Sir St. Clair Thomson will speak on tuberculosis of the upper respiratory tract, and Mr. H. B. Bickerton on tuberculosis of the eye. The meeting will be resumed at 8.30 p.m., when Dr. E. L. Middleton and Dr. P. Hefernan will discuss industrialism and tuberculosis.

Society of Chemical Industry

A joint meeting of the London section and the food group of this society will be held in the rooms of the Chemical Society at Burlington House, Piccadilly, London, W., on Monday, Nov. 4th, at 8 p.m., when Prof. I. M. Heilbron, F.R.S., will deliver a Jubilee memorial lecture entitled *Chemical Elixirs of Life*. He will deal with recent developments in the chemistry of the sterols and related compounds.

National University of Ireland

A travelling studentship in physiology has been awarded to Dr. D. K. O'Donovan, University College, Dublin.

Ministry of Health

Mr. S. F. Wilkinson has been appointed assistant private secretary to Sir Kingsley Wood; Mr. T. W. Williams private secretary to Mr. Shakespeare; and Mr. J. E. Pater private secretary to Dr. MacNalty.

Scholarships for Sons of Medical Men

Two £100 scholarships are again being offered at Port Regis preparatory school to sons of medical men. The examination is being held in March, 1936, and candidates must be under nine years of age at the time of competing. Applications should be addressed to the headmaster, Port Regis, Broadstairs, not later than Feb. 20th.

War Relief in Abyssinia

The British Red Cross Society has received £5000 from Lady Ogle towards the organisation and dispatch of relief to the Ethiopian war zone. The total now in hand is some £19,000, and a small advance ambulance unit will leave London for Abyssinia about Nov. 17th. Further funds are urgently required for the maintenance and enlargement of this unit, and may be sent to Sir Arthur Stanley, British Red Cross Society, 14, Grosvenor-crescent, S.W.1.

Children's Play Clinic at Guy's Hospital

In connexion with the department of medical psychology at this hospital a children's play clinic has been started. Toys are needed for the new venture.

Alford Memorial Cottage Hospital

Sir Lancelot Travers opened a new ward, new quarters for nurses, and an X ray department at this hospital on Oct. 18th. The extensions have cost over £2000, of which £1000 has yet to be raised.

Plymouth City Hospital

The foundation-stone of a new nurses' home for this hospital was laid on Oct. 16th. It is to be a three-storied building and will provide accommodation for 152 nurses. There will be a recreation-room, a library, a dance hall, and a laundry.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 5th.

Orthopaedics. 5.30 P.M. (Cases at 4.30 P.M.) Mr. H. J. Seddon: 1. Von Recklinghausen's Disease with Scoliosis. Mr. C. Hope Carlton: 2. Use of an Artificial Limb in the Treatment of Recurrent

Fractures. 8.30 P.M. (Bernhard Baron London Hospital, E.), J. O. W. Russell: 1. Spongiblastoma

Multiforme. Dorothy S. Russell: 2. Spinal and Ventricular Metastases in Spongiblastoma Multiforme. 3. Rare Intracranial Tumours. J. Gilmour: 4. Estimation by Planimeter of Relative Amount of Interstitial Tissue in Parathyroid Glands. Donald Hunter and H. M. Turnbull: 5. Osteomalacia in Various Conditions. F. C. O. Valentine: 6. The Effect of Staphylococcus Toxins on the Leucocytes of Human and Rabbit Blood. A. W. Downie: 7. Complement Fixation with Antigen-antibody Complexes and Pneumococcus. 8. Antipneumococcus Serum. 9. Experimental Psittacosis Pneumonia in Mice. H. Loewenthal and M. G. Pradhan: 10. Colonial Forms of Hemolytic Streptococci.

WEDNESDAY.

History of Medicine. 5 P.M. Dr. E. J. Holmyard: The Pharmacology of Medieval Islam. A discussion, opened by Prof. J. R. Partington, will follow.

Surgery. 8.30 P.M. Mr. W. Sampson Handley: Paralytic Neus in Acute Appendicitis (presidential address).

FRIDAY.

Clinical. 5.30 P.M. (Cases at 4.30 P.M.) Mr. J. E. H. Roberts (with Dr. A. J. Wilson): 1. Calcified Peri-

cardium with Ascites after Pericardiectomy. Mr. J. E. H. Roberts: 2-3. Total Pneumonectomy for Bronchiectasis. 4. Lobectomy for Bronchiectasis. Dr. R. C. Wingfield: 5. Spondylitis Rhizomelique. Dr. Gerald Slot: 6. Cases Illustrating Aurotherapy. Ophthalmology. 8.30 P.M. (Cases at 8 P.M.) Mr. J. H. Duggart: Fuchs's Epithelial Dystrophy.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Nov. 8th.—8.45 P.M. (Miller General Hospital, Greenwich, S.E.), Dr. Charles Beney: The Chronic Discharging Ear.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

TUESDAY, Nov. 5th.—5 P.M., Dr. Daniel T. Davies: Peptic Ulcer (Bradshaw lecture).

THURSDAY.—5 P.M., Dr. J. D. Rolleston: History of the Acute Exanthemata (first of two FitzPatrick lectures).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-Fields, W.C.

MONDAY, Nov. 4th.—5 P.M., Dr. L. W. Proger: Some Diseases of Bone (II.).

FRIDAY.—5 P.M., Dr. A. J. E. Cave: The Anatomy and Physiology of the Human Larynx (II.).

JOINT TUBERCULOSIS COUNCIL.

MONDAY, Nov. 4th (Brompton Hospital, S.W.).—10 A.M., Dr. F. Lee Lander: Demonstration of Pleural Wash-out. 11.15 A.M., Dr. F. H. Young: A.P. Therapy for Pulmonary Tuberculosis in Ambulatory Patients. 2.30 P.M., Dr. W. E. Lloyd: Tuberculosis in Childhood. 3.45 P.M., Dr. J. L. Livingstone: Chronic Bronchitis and Emphysema.

TUESDAY.—10 A.M., Dr. A. L. Panch: The Value of Lipiodol in Diagnosis. 11.15 A.M., Dr. Clifford Hoyle: Chronic Miliary Tuberculosis. 2.30 P.M., Dr. J. V. Sparkes: Radiological Demonstration. 3.45 P.M., Dr. A. Hope Gosse: Difficulties in Diagnosis of Pulmonary Disease.

WEDNESDAY.—10 A.M., Dr. M. Davidson: New Growths of the Lung. 11.15 A.M., Mr. A. Tudor Edwards: Surgical Treatment of Pulmonary Tuberculosis. 2 P.M., Dr. Cecil Wall: Dry Bronchiectasis. 3.15 P.M., Mr. A. Tudor Edwards: Operations.

THURSDAY.—10 A.M., Dr. G. E. Bennett: Demonstration of Cases: (a) Sarcoidosis. (b) Visceral Leishmaniasis. (c) Sarcoidosis and other visceral diseases. 11.15 A.M., Dr. R. C. Wingfield: Pleural Effusions in Tuberculosis. 2.30 P.M., Dr. R. L. Rawlinson: Radiology of the Chest. 3.45 P.M., Dr. Geoffrey Marshall: Methods of Treatment of Pulmonary Tuberculosis and their Indications.

FRIDAY.—10 A.M., Dr. W. D. W. Brooks: Pneumokoniosis. 11.15 A.M., Dr. E. E. Atkin: Morbid Anatomy of Tuberculous Disease of the Lungs. 2.30 P.M., Dr. L. S. T. Burrell: Treatment of Pleural Effusions and Empyema. 3.45 P.M., Mr. F. C. Ormerod: Bronchoscopy.

SATURDAY.—10 A.M., Mr. J. E. H. Roberts: Surgical Treatment of Pulmonary Suppuration. 11.15 A.M., Mr. J. E. H. Roberts: Operations.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Nov. 4th to SATURDAY, Nov. 9th.—INFANTS HOSPITAL, Vincent-square, S.W. Mon., Wed., and Fri., at 8 P.M. Course for the F.R.C.S. (Primary) in Anatomy and Physiology.—ST. PETER'S HOSPITAL, Henrietta-street, W.C. All-day course in Urology.—MEDICAL SOCIETY OF LONDON, Chandos-street, W. Thurs. 4 P.M., Dr. Norman Haire: Practical Contraception.—Courses and lectures open only to members.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Nov. 4th.—3.30 P.M., Dr. Carmichael: The Sympathetic Nervous System (I.).

TUESDAY.—3.30 P.M., Dr. Carmichael: The Sympathetic Nervous System (II.).

WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. Carmichael: The Sympathetic Nervous System (III.).

FRIDAY.—3.30 P.M., Dr. Bernard Hart: The Psychoneuroses (V.).

Out-patient clinic daily at 2 P.M.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Nov. 7th.—2 P.M., Dr. B. Shires: Treatment of Nervi with Radium. 3 P.M., Dr. W. W. Payne: Diabetes (II.), Treatment.

Out-patient clinics daily at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Nov. 6th.—4.30 P.M., Mr. Kenneth Walker: The Treatment of Malignant Disease of the Genito-urinary Tract.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.

WEDNESDAY, Nov. 6th.—4 P.M., Dr. H. V. Morlock: Diagnosis and Treatment of Intrathoracic New Growths.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

WEDNESDAY, Nov. 6th.—4 P.M. (St. James' Hospital, Ouseley-road, S.W.), Dr. C. E. Lakin: Demonstration of medical cases.

objective basis of the work recorded, which is its distinctive feature. The starting point of Dr. Suttie's conception of human life and development is the need for companionship, and upon this need he founds his conception of love and his insistence upon this factor as against the Freudian theory of sex; his views of religion are matriarchal in contrast to the patriarchal view of Freud. The book correlates the author's life study of psychology, sociology, and anthropology.

CHARLES FREDERICK RUMBOLL, M.D. Durh.

Dr. Rumboll, who died at Melksham, Wilts, on Oct. 23rd, was born at Calne in 1859, the son of

Charles L. Rumboll of Bedford. Educated at Epsom College, he entered St. Bartholomew's Hospital from which he qualified in 1882. He then took medical degrees at Durham University and in 1886 qualified for the gold medal in the M.D. He was in practice at Melksham for over 40 years and was surgeon to the cottage hospital and local friendly societies. Having become a barrister-at-law of the Inner Temple, he was appointed to the commission of peace and later deputy lieutenant for the county. For many years he served in the 2nd Wilts Volunteers, retiring with the rank of lieutenant-colonel. Dr. Rumboll married Edith, daughter of W. H. Cross, J.P. for Middlesex, who survives him without issue.

MEDICAL NEWS

University of Oxford

Dr. John Mellanby, professor of physiology in the University of London, at St. Thomas's Hospital, has been appointed to the Waynflete chair of physiology in the University of Oxford.

Born at West Hartlepool in 1878, Prof. Mellanby is the younger brother of Prof. Alexander Mellanby of Glasgow, and the elder brother of Prof. Edward Mellanby, F.R.S., secretary of the Medical Research Council.

Royal at the he sta he carried tion at qualifi for his he held the George Henry Lewes studentship at Cambridge, and devoted himself to physiological research on the coagulation of blood. He was appointed head of the department of physiology at St. Thomas's Hospital medical school in 1909, and was given the title of professor by London University in 1920. In 1929 he was elected a fellow of the Royal Society in recognition especially of his studies on the coagulation of blood and the mechanism of pancreatic secretion. He was editor of *Physiological Abstracts* from 1925 to 1935, and has acted as examiner at the Universities of Cambridge, Oxford, Leeds, and Sheffield, and for the diplomas of the Royal College of Surgeons.

University of Cambridge

Dr. Thomas Shirley Holo, lecturer in biochemistry in the University, has been elected master of Emmanuel College.

An entrance scholarship has been founded at Peterhouse which is restricted to candidates who intend to study medicine. It may be awarded for proficiency in mathematics, classics, natural sciences, or history. Further particulars will be found in our advertisement columns.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery.—C. N. Chowdary, Univ. of Durh.; P. D. Lynch, Guy's Hosp.; W. J. Pinto, Univ. of Madras; M. Q. H. Siddiki, Univ. of Leeds; and G. W. van Mentz and G. M. Williams, London Hosp.

Medicine.—R. H. Bembridge, King's Coll. Hosp., and A. Morgan, Univ. of Manch.

Forensic Medicine.—R. H. Bembridge, King's Coll. Hosp.; E. R. Jones, St. Mary's Hosp.; A. Morgan, Univ. of Manch.; and G. M. Williams, London Hosp.

Midwifery.—H. Burrows, Univ. of Manch.; E. M. Craggs, Middlesex Hosp.; F. J. H. D. de Marigny, Guy's Hosp.; M. G. H. Jones and J. R. Roeyn-Jones, Welsh National School of Medicine; M. Q. H. Siddiki, Univ. of Leeds; H. L. W. Sixsmith, Welsh National School of Medicine; R. L. Walmsley, Univs. of Camb. and Leeds; and C. W. Williams, Welsh National School of Medicine.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery: C. N. Chowdary, E. M. Craggs, A. Morgan, and W. J. Pinto.

Lectures for School Medical Officers

Two lectures for school medical officers on the diagnosis of congenital syphilis will be given by Dr. David Nabarro at the Hospital for Sick Children, Great Ormond-street, London, W.C., on Monday and Tuesday, Nov. 18th and 19th, at 2.30 p.m.

Royal College of Physicians of London

A Leverhulme scholarship of the annual value of £500 will shortly be awarded by the College. The scholar must undertake the investigation of some problem of disease in any branch of medicine. Further information will be found in our advertisement columns.

University of London

The title of emeritus professor of bacteriology in the University has been conferred on Dr. J. W. H. Eyre, formerly professor of bacteriology at Guy's Hospital medical school. Dr. Alexander Haddow has been reappointed Laura de Saliceto student.

University of Reading

At a congregation to be held on Dec. 2nd, when Sir Austen Chamberlain will be installed as Chancellor, the honorary degree of D.Sc. will be conferred on Sir Gowland Hopkins, O.M., P.R.S. Other recipients of honorary degrees will include Monsieur Horriot, Sir Robert Vansittart, Lord Rutherford, O.M., and Sir Joseph J. Thomson, O.M.

Scottish Conjoint Board

At recent examinations of the conjoint board of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow the following candidates were successful:—

L.R.C.P., L.R.C.S., AND L.R.F.P. & S.

M. R. Schleifer, S. H. Harrison, M. B. Spiegel, I. J. G. Mowat, Joseph Freeman, Harry Farber, Lot Hart, M. W. U. Alwi, John Orr, S. J. T. R. Murphy, Ruth Schurer, C. S. F. H. T. Rachlin, D. H. Abbott, Maria A. David Simon, M. S. Hendriks, R. C. G. B. Shirlaw, Sarah L. Mulholland, Otto Moses, Will Straus, C. J. Greenberg, A. E. Thompson, W. F. M. Unger, P. P. Perera, O. W. Nordesjo, D. S. Abeyagunawardene, John Jamieson, Abraham Berkow, Thomas Miller, J. E. Heller, Herbert Levy, Karl Melzer, Ralph Coff, H. G. Garas, Frances Hunter, Sanmugan Rajendram, Beate Isserlin, Solomon Marano, Ferenc Kellermann, and M. J. Philip.

Tuberculosis Association

A meeting of this association will be held at Manson House, 26, Portland-place, London, W., on Friday, Nov. 22nd, at 5.15 p.m., at which Sir StClair Thomson will speak on tuberculosis of the upper respiratory tract, and Mr. H. R. Bickerton on tuberculosis of the eye. The meeting will be resumed at 8.30 p.m., when Dr. E. L. Middleton and Dr. P. Hefernan will discuss industrialism and tuberculosis.

Society of Chemical Industry

A joint meeting of the London section and the food group of this society will be held in the rooms of the Chemical Society at Burlington House, Piccadilly, London, W., on Monday, Nov. 4th, at 8 p.m., when Prof. I. M. Heilbron, F.R.S., will deliver a Jubilee memorial lecture entitled *Chemical Elixirs of Life*. He will deal with recent developments in the chemistry of the sterols and related compounds.

National University of Ireland

A travelling studentship in physiology has been awarded to Dr. D. K. O'Donovan, University College, Dublin.

Ministry of Health

Mr. S. F. Wilkinson has been appointed assistant private secretary to Sir Kingsley Wood; Mr. T. W. Williams private secretary to Mr. Shakespeare; and Mr. J. E. Pater private secretary to Dr. MacNalty.

Scholarships for Sons of Medical Men

Two £100 scholarships are again being offered at Port Regis preparatory school to sons of medical men. The examination is being held in March, 1936, and candidates must be under nine years of age at the time of competing. Applications should be addressed to the headmaster, Port Regis, Broadstairs, not later than Feb. 20th.

War Relief in Abyssinia

The British Red Cross Society has received £5000 from Lady Ogle towards the organisation and dispatch of relief to the Ethiopian war zone. The total now in hand is some £19,000, and a small advance ambulance unit will leave London for Abyssinia about Nov. 17th. Further funds are urgently required for the maintenance and enlargement of this unit, and may be sent to Sir Arthur Stanley, British Red Cross Society, 14, Grosvenor crescent, S.W.1.

Children's Play Clinic at Guy's Hospital

In connexion with the department of medical psychology at this hospital a children's play clinic has been started. Toys are needed for the new venture.

Alford Memorial Cottage Hospital

Sir Lancelot Travers opened a new ward, new quarters for nurses, and an X ray department at this hospital on Oct. 18th. The extensions have cost over £2000, of which £1000 has yet to be raised.

Plymouth City Hospital

The foundation-stone of a new nurses' home for this hospital was laid on Oct. 16th. It is to be a three-storied building and will provide accommodation for 152 nurses. There will be a recreation-room, a library, a dance hall, and a laundry.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 5th.
Orthopaedics. 5.30 P.M. (Cases at 4.30 P.M.) Mr. H. J. Seddon: 1. Von Recklinghausen's Disease with Scoliosis. Mr. C. Hope Carleton: 2. Use of an Artificial Ligamentum Teres in the Treatment of Recurrent Shoulder Dislocation.
Pathology. 8.15 P.M. for 8.30 P.M. (Bernhard Baron Institute of Pathology, London Hospital, E.), J. O. W. Bland and Dorothy S. Russell: 1. Spongioblastoma Multiforme. Dorothy S. Russell: 2. Spinal and Ventricular Metastases in Spongioblastoma Multiforme. 3. Rare Intracranial Tumours. J. Gilmour: 4. Estimation by Planimeter of Relative Amount of Interstitial Tissue in Parathyroid Glands. Donald Hunter and H. M. Turnbull: 5. Osteomalacia in Various Conditions. F. C. O. Valentine: 6. The Effect of Staphylococcus Toxins on the Leucocytes of Human and Rabbit Blood. A. W. Downie: 7. Complement Fixation with Antipneumococcal Serum and Pneumococcus Polysaccharide. B. Woolf and J. R. Marack: 8. Cross Reactions of Type II. Antipneumococcus Serum with Synthetic Compounds of Glucuronic Acid. S. P. Bedson: 9. Experimental Psittacosis Pneumonia in Mice. H. Loewenthal and M. G. Gradman: 10. Colonial Forms of Hemolytic Streptococci.
WEDNESDAY.
History of Medicine. 5 P.M. Dr. E. J. Holmyard: The Pharmacology of Medieval Islam. A discussion, opened by Prof. J. R. Partington, will follow.
Surgery. 8.30 P.M. Mr. W. Sampson Handley: Paralytic Ileus in Acute Appendicitis (presidential address).
FRIDAY.
Clinical. 5.30 P.M. (Cases at 4.30 P.M.) Mr. J. E. H. Roberts (with Dr. A. J. Wilson): 1. Calcified Peri-

cardium with Ascites after Pericardiectomy. Mr. J. E. H. Roberts: 2-3. Total Pneumonectomy for Bronchiectasis. 4. Lobectomy for Bronchiectasis. Dr. R. C. Wingfield: 5. Spondylitis Rhizomelique. Dr. Gerald Slot: 6. Cases Illustrating Aurotherapy. *Ophthalmology.* 8.30 P.M. (Cases at 8 P.M.) Mr. J. H. Doggart: Fuchs's Epithelial Dystrophy.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Nov. 8th.—8.45 P.M. (Miller General Hospital, Greenwich, S.E.), Dr. Charles Beney: The Chronic, Discharging Ear.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

TUESDAY, Nov. 5th.—5 P.M., Dr. Daniel T. Davies: Peptic Ulcer (Bradshaw lecture).

THURSDAY.—5 P.M., Dr. J. D. Rolleston: History of the Acute Exanthemata (first of two FitzPatrick lectures).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Nov. 4th.—5 P.M., Dr. L. W. Proger: Some Diseases of Bone (II.).

FRIDAY.—5 P.M., Dr. A. J. E. Cave: The Anatomy and Physiology of the Human Larynx (II.).

JOINT TUBERCULOSIS COUNCIL.

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WEDNESDAY.—10 A.M., Dr. M. Davidson: New Growths of the Lung. 11.15 A.M., Mr. A. Tudor Edwards: Surgical Treatment of Pulmonary Tuberculosis. 2 P.M., Dr. Cecil Wall: Dry Bronchiectasis. 3.15 P.M., Mr. A. Tudor Edwards: Operations.

THURSDAY.—10 A.M., Dr. G. E. Beaumont: Demonstration of Cases: (a) Sedimentation. (b) Vital Capacity. (c) Sanoecrysin and other special drugs. 11.15 A.M., Dr. R. C. Wingfield: Relapse in Pulmonary Tuberculosis. 2.30 P.M., Dr. R. L. Rawlinson: Radiology of the Chest. 3.45 P.M., Dr. Geoffrey Marshall: Methods of Treatment of Pulmonary Tuberculosis and their Indications.

FRIDAY.—10 A.M., Dr. W. D. W. Brooks: Pneumokoniosis. 11.15 A.M., Dr. E. E. Atkin: Morbid Anatomy of Tuberculous Disease of the Lungs. 2.30 P.M., Dr. L. S. T. Burrell: Treatment of Pleural Effusions and Empyema. 3.45 P.M., Mr. F. C. Ormerod: Bronchoscopy.

SATURDAY.—10 A.M., Mr. J. E. H. Roberts: Surgical Treatment of Pulmonary Suppuration. 11.15 A.M., Mr. J. E. H. Roberts: Operations.

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Out-patient clinic daily at 2 P.M.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Nov. 7th.—2 P.M., Dr. B. Shires: Treatment of Neri with Radium. 3 P.M., Dr. W. W. Payne: Diabetes (II.), Treatment.

Out-patient clinics daily at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

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WEDNESDAY, Nov. 6th.—4.30 P.M., Mr. Kenneth Walker: The Treatment of Malignant Disease of the Genitourinary Tract.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.

WEDNESDAY, Nov. 6th.—4 P.M., Dr. H. V. Morlock: Diagnosis and Treatment of Intrathoracic New Growths.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

WEDNESDAY, Nov. 6th.—3 P.M. (St. James' Hospital, Ouseley-road, S.W.), Dr. C. E. Lakin: Demonstration of medical cases.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Nov. 4th.—10 A.M., Medical Wards, Skin Clinic. 11 A.M., Surgical Wards. 2 P.M., Gynaecological and Surgical Wards, Eye and Gynaecological Clinics. 4.15 P.M., Mr. Green-Armytage: Menstrual Disorders.

TUESDAY, 10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Throat Clinic. 4.15 P.M., Mr. Simpson Smith: Osteomyelitis.

WEDNESDAY, 10.30 A.M., Children's Wards and Clinic, Medical Wards. 2 P.M., Eye Clinic, Gynaecological Operations. 4.15 P.M., Mr. Gibb: Demonstration of Eye Cases.

THURSDAY, 10 A.M., Neurological and Gynaecological Clinics. 12 noon, Fracture Clinic. 2 P.M., Eye and Genito-urinary Clinics.

FRIDAY, 10 A.M., Skin Clinic. 12 noon, Lecture on Treatment. 2 P.M., Throat Clinic.

SATURDAY, 10 A.M.—Medical Wards, Children's and Surgical Clinics.

The lectures at 4.15 P.M. are open to all medical practitioners without fee. Operations and medical and surgical clinics daily at 2 P.M.

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.

THURSDAY, Nov. 7th, 9 P.M., Dr. Hugh Davies: Radiographic Types of Pulmonary Tuberculosis.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.

TUESDAY, Nov. 5th.—5 P.M., Dr. H. C. Semon: Diseases of the Buccal Mucous Membrane.

THURSDAY, 5 P.M., Dr. W. J. O'Donovan: Dermatological Neuroses.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Nov. 6th.—3.30 P.M., Dr. Reginald Miller: Rheumatism and Heart Disease in Youth.

INVALID CHILDREN'S AID ASSOCIATION.

THURSDAY, Nov. 7th, and FRIDAY, 10.30 A.M. (Drapers' Hall, Throgmorton-street, E.C.), Joint Conference with the Central Council for the Care of Cripples.

UNIVERSITY OF SHEFFIELD.

FRIDAY, Nov. 8th.—3 P.M. (Royal Hospital), Mr. Vincent Townrow: Ear, Nose, and Throat Clinic. 3 P.M. (Royal Infirmary), Dr. Rupert Hallam: Dermatological Clinic. Mr. Wellwood Ferguson: Ophthalmological Clinic.

SUNDAY, 10.30 A.M. (Royal Hospital), Dr. E. Fretson Skinner: Medical Cases. 10.30 A.M. (Royal Infirmary), Dr. Robert Platt: Medical Cases. Mr. T. B. Moutat: Surgical Cases. 10.30 A.M. (Jessop Hospital), Mr. Glyn Davies: Gynaecological Cases.

GENERAL INFIRMARY, Leeds.

TUESDAY, Nov. 5th.—3.30 P.M., Dr. Burrow: Clinical demonstration of cases of disease of the nervous system.

PUBLIC DISPENSARY, Leeds.

WEDNESDAY, Nov. 6th.—4 P.M., Dr. Maxwell Telling: Some Modern Psychological Problems of Practice.

ROYAL INFIRMARY, Manchester.

TUESDAY, Nov. 5th.—4.15 P.M., Mr. John Morley: Malignant Disease of the Thyroid Gland.

FRIDAY, 4.15 P.M., Mr. H. H. Rayner: Demonstration of surgical cases.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE EAR, NOSE, THROAT AND CHEST, Manchester.

WEDNESDAY, Nov. 6th.—4.30 P.M., Dr. H. R. Clarke: Bronchitis.

ST. MARY'S HOSPITALS, Manchester.

THURSDAY, Nov. 7th.—4.15 P.M. (Whitworth-street West Hospital), Dr. Lapage: Asthma and Allergy in Children.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

WEDNESDAY, Nov. 6th.—4.15 P.M. (Royal Hospital for Sick Children), Prof. G. B. Fleming: Rheumatism in Childhood.

Vacancies

For further information refer to the advertisement columns

Aberdeen County.—Asst. M.O.H. £500.

Aberdeen, Rowett Research Institute, Bucksburn.—Head of Physiology Department. £800-£1000.

Accrington, Victoria Hospital.—H.S. £150.

Bagshot Rural District Council, &c.—M.O.H., &c. £1000.

Birmingham City.—Asst. M.O. for Maternity and Child Welfare. £500.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Brighton County Borough Mental Hospital, Haywards Heath.—Asst. M.O. £350.

Cambridge, Addenbrooke's Hospital.—H.P. At rate of £130.

Cancer Hospital, Fulham-road, S.W.—Res. M.O. £200. Also Med. Reg. £150.

Cardiff Royal Infirmary.—H.S. to Ophth. Dept. At rate of £40.

Constance-road Institution, East Dulwich, S.E.—Asst. M.O. £250.

Dreadnought Hospital, Greenwich, S.E.—Receiving Room Officer. At rate of £200.

East Ham Memorial Hospital, Shrewsbury-road, E.—Hon. Physician.

Edinburgh, National Committee for the Training of Teachers.—M.O. and Lecturer on Hygiene for Aberdeen Training Centre. £725.

Fulham Hospital, St. Dunstan's-road, W.—Asst. M.O. £250.

Hastings, Royal East Sussex Hospital.—Asst. Pathologist. £300.

Hôpital et Dispensaire Français, 172, Shaftesbury-avenue, W.C.—Phys. to In-patients.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Asst. Physician. Also Hon. Asst. Surgeon.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. M.O. for Country Branch. At rate of £250. Also Res. Anesthetic Registrar. At rate of £150.

Hospital for Women, Soho-square, W.—Surgeon in Charge of Out-patients.

Hostel of St. Luke, 14, Fitzroy-square, W.—Res. M.O. At rate of £200.

Hull Royal Infirmary.—Cas. O. At rate of £150.

Indian Medical Service.—Commissions.

Jersey General Hospital and Poor Law Infirmary.—Radiologist. £500.

Kingston-on-Thames, Surrey County Mental Hospital.—Jun. Asst. M.O. £350.

Leeds City.—Asst. M.O. for Maternity and Child Welfare £250.

Leeds, Killingbeck Sanatorium.—Sen. Asst. Res. M.O. £350.

Leicester.—ed. Supt. £500.

Leicester 1.—At rate of £150.

Liverpool.—st. Clin. Tuber. O. £550.

London Homœopathic Hospital, Great Ormond-street, W.C.—Hon. Asst. Physician.

Manchester, Ancoats Hospital.—Cas. O. At rate of £250.

Manchester, Hulme Dispensary, Dale-street.—Res. M.O. £250.

Middlesex Hospital and Medical School, W.—Two Asst. Med. Registrarships. Also one Otolological Registrarship. Each £300.

Mile End Hospital, Bancroft-road, E.—Asst. M.O. £250.

New End Hospital, Hampstead, N.W.—Asst. M.O. £250.

Northampton General Hospital.—H.S. At rate of £150.

Norwich, Norfolk and Norwich Hospital.—Cas. O. £120.

Plymouth, Prince of Wales's Hospital, Greenbank-road.—Res. Anesthetist and H.S. to Special Depts. At rate of £120.

Prince of Wales's General Hospital, N.—Hon. Physician to Dept. of Physical Medicine.

Princess Beatrice Hospital, Richmond-road, Earl's Court, S.W.—Asst. Surgeon.

Queen.—Hospital, Marylebone-road, N.W.

Res.—Hospital. At rate of £200. Res. Anesthetist. At rate of £100. Res. Anesthetist and Dist. Res. M.O. At rate of £90. Also Asst. Res. M.O. At rate of £80.

Romford, Oldchurch Hospital.—Jun. Res. M.O. £250.

Rotherham Hospital.—H.P. £180.

Royal College of Physicians, Pall Mall East, S.W.—Leverhulme Research Scholarship. £500.

Royal Northern Hospital, Holloway, N.—H.S. and H.P. Each at rate of £70.

St. Helens Hospital, Lanes.—Jun. H.S. £150.

St. Mary, Islington, Hospital, Highgate Hill, N.—Asst. M.O. £350.

St. Pancras Hospital, Pancras-road, N.W.—Asst. M.O. £250.

Sheffield, Jessop Hospital for Women.—Asst. Hon. Surgeon. Also H.S. At rate of £100.

Southampton, Royal South Hants and Southampton Hospital.—H.P. At rate of £150.

Sunderland Royal Infirmary.—H.S. £120.

Swansea General and Eye Hospital.—Cas. O. At rate of £150-£175.

Wakefield, Scalebar Park Mental Hospital.—Asst. M.O. £650.

Walsall General Hospital.—H.P. and Res. Asst. Pathologist. At rate of £150.

West Bromwich County Borough.—M.O.H. and School M.O. £1000.

West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Registrar. £200. Also two Hon. Med. Psychologists.

West London Hospital, Hammersmith-road, W.—Res. Cas. O. At rate of £100. Also Physician to X Ray (Therapeutic) and Electrical Depts.

Wimbledon Hospital, Thurston-road, S.W.—Res. M.O. At rate of £150.

Woking and District Victoria Hospital.—Res. M.O. £120.

Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—Two H.S.'s. Each at rate of £100.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Bingley (York, West Riding) and St. Annes-on-the-Sea (Lanes.).

A MODERN SCHOOL SANATORIUM.—On Oct. 26th Major-General W. P. MacArthur, R.A.M.C., opened a new sanatorium at Penrhos College for Girls, Colwyn Bay, Prof. Warrington Yorke, M.D., chairman of the board of governors, presiding. The building was designed by Mr. S. Colwyn Foulkes, M.Arch., A.R.I.B.A. The ground floor contains a private room for the resident doctor, a medical inspection room, matron's room, dental room, two four-bed wards, two two-bed wards, one single ward, two bathrooms, and linen room and kitchen. On the first floor there are the same number of wards, bed-rooms for doctor and matron, two maids' rooms, three bathrooms, a linen room, and the discharge and fumigation department. The sick-rooms, fitted with vitæ-glass, are grouped to the south and west, and every bed can be wheeled out on to the terrace or balconies.

NOTES, COMMENTS, AND ABSTRACTS

A STICKIT DOCTOR *

BY N. G. HORNER, M.D.

A PERSON whose life is spent half-way between two callings finds the temptation very great to choose a title such as Medicine and Letters or Some Literary Physicians, or (perhaps even more tempting) The Doctor in Detective Fiction. But, wondering what fresh stones were to be found in so well worked a quarry, I cast about for a topic less hackneyed that might entertain an audience made up largely of people on the threshold of medicine.

Looking back 30 years and more to student days, I remembered a novel that had some popularity among the simple-hearted reading public of that period—"The Stickit Minister," by S. R. Crockett. To a young English ignoramus the title was mildly provocative. Crockett's fellow-countryman, J. M. Barrie, had written a successful book and play, "The Little Minister," so we all knew what a minister meant in that context. It meant a Scotch clergyman. But I had to look up "stickit" in a glossary of Scottish words and phrases which said: "Bungled and spoiled in the making." One of Webster's dictionaries went further: "*Stickit*—stuck, unsuccessful, having failed, imperfect. *Stickit Minister*—a probationer who is unqualified for, or fails to obtain, a pastoral charge." Crockett had borrowed the expression from his hero, Sir Walter Scott. Poor Dominie Sampson in "Guy Mannering," was "a sort of person who might be the village school-master, or perhaps the minister's assistant"; he had studied for the Church, but upon his first attempt at preaching he "became totally incapable of proceeding in his intended discourse . . . and was ever after designated as a stickit minister."

A stickit doctor, then, is one who relinquishes the calling from want of ability or means to pursue it. There is no synonym for "stickit" in our southern vocabulary. "Botched," though a good English word, hardly meets the case. Have we not all met him in embryo at the hospital, or, later on, in his floundering after admission to the Register? He is the square peg in the round hole; the "chronic" who may at long last slip through the cordon of examiners only to make a hash of practice; the decent fellow who ought to have tried another job; or even the supposed duffer who discloses afterwards a genuine talent—perhaps real genius—in some quite different walk of life. At his worst the stickit doctor is the predestined failure in any profession.

The Doctor Outside Medicine

Let us first go over the names of a few of those who might be described playfully as "Can't Stick It" doctors—very able men who practised medicine for a time, or taught medical students, and then quitted our ranks for more congenial work in another field. There have been many such defections. In poetry a good example is Robert Bridges, a hospital physician for some years, whose "Testament of Beauty," published on his 85th birthday, Oct. 23rd. 1929, is still fresh in our minds. It has been said of Bridges that he was convinced that "he would be a better poet if he learned and practised some profession which brought him into active contact with human life, and particularly with the investigations and achievements of natural science." And 300 years earlier there was the poet and musician Thomas Campion, writer of charming lyric verse. In philosophy the outstanding English name is that of John Locke. Seventy years after Locke's death a young German named Schiller graduated in medicine on his way to immortality as poet and philosopher. Among

lawyers of recent times we recall the first Viscount Finlay, Lord Chancellor of England some 15 or 20 years ago, and note that two practising King's Counsel of to-day, Tom Eastham and Digby Cotes-Predy, are medical graduates. A small handful of church dignitaries—colonial or missionary bishops and a dean or two—must be reckoned in, and we cannot omit Dr. Livingstone, I presume. There is indeed a long list of medical travellers and explorers, from the time of Mungo Park onwards. Between his explorations in Africa, tracing the course of the Nile, Park practised for some years at Peebles.

Among living painters there are Henry Tonks, Slade professor of fine art in the University of London, 1917-30. Henry Lamb, and Perceval Yettis. Statecraft, politics, and public administration have claimed the redoubtable Georges Clemenceau, Prime Minister of France; Leander Starr Jameson, of South Africa, known in the 'nineties as "Brave Doctor Jim"; Leonard Wood, of the United States of America; Lord Ilkerton, one of Gladstone's lesser henchmen; Christopher Addison, Minister of Munitions, of Health, and of Agriculture; Auckland Geddes, the second of Lloyd George's cabinet anatomists, who held one ministerial post after another and then became British Ambassador at Washington; Walter Elliot, Minister of Agriculture to-day; and many other active members, past or present, of the House of Commons.

The stage took from medicine Charles Wyndham, Stephen Townesend, and Gilbert Hare, though Hare has long since gone back to his first love, bacteriology. Cricket was the chief occupation in life of the greatest of all cricketers, William Gilbert Grace, even if W.G. *did* like to brag in the pavilion at Lords about his "good practice down in Gloucestershire." Fiction and the writing of plays have lured away from us in my time Arthur Conan Doyle, Henry de Vere Stacpoole, William Somerset Maugham, Francis Brett Young, James Bridie (still known in the medical world of Glasgow as Dr. O. H. Mavor), Warwick Deeping, Austin Freeman, and A. J. Cronin, with Arthur Schnitzler in Germany, and Baron Henri de Rothschild in France. In the eighteenth century Tobias Smollett stood out as the one medical novelist when the art of the English novel was in its childhood: his "Roderick Random," "Humphrey Clinker," and "Peregrine Pickle," throw many sidelights on the health resorts, with shrewd comments on contemporary medicine. Without widening my net and narrowing its mesh to catch all the smaller fry of ex-doctors in literary waters, let me name a few medical naturalists whose writings on birds, beasts, and plants have given pleasure and instruction in the present century: Francis Darwin, Arthur Keith, F. Dawtreay Drewitt, A. F. R. Wollaston, Philip Gosse.

As for the members of our profession who have achieved eminence in the realm of pure science their name is legion. Medicine was the mother of the sciences. Where can we begin with them, or where end, even in our own country? William Harvey practised as a physician all the days of his working life; and the same might almost be said of Thomas Young, one of the greatest of English natural philosophers. Albrecht von Haller, physiologist, philosopher, poet, and statesman, graduated M.D. at Leyden. Thomas Henry Huxley took a medical qualification and taught medical students before he became one of the eminent Victorians whom Lytton Strachey forgot to belittle; with Michael Foster, Huxley ranks as physiologist and writer of English and as a fertilising influence upon the science of medicine. Charles Sherrington and Frederick Gowland Hopkins are with us to-day—successors to Lister and to Hans Sloane, the founder of the British Museum, in the presidential chair of the Royal Society. It is within this group, therefore, that we must place those men and women who obtain a medical degree without any intention of ever practising, because they mean to devote themselves to investiga-

* Abstract of paper read to the Listerian Society, King's College Hospital, October, 1935.

tion or teaching in one of the sciences allied to medicine but believe that the full medical course will widen their outlook. The word "stickit" does not apply to them. They have not failed at doctoring: they have taken our curriculum in their stride.

So we come to the practising doctors whose pens, from century to century, have enriched general literature. François Rabelais graduated as bachelor of medicine at Montpellier in 1530, and did well as a physician after—shall we say?—moderate success as a monk. The great name of Sir Thomas Browne, of Norwich, stands out also. "Religio Medici" was written to please himself and his friends in 1635, and he only published the authentic text eight years later because a pirated edition had already got into print. Then in the eighteenth century we find John Arbuthnot, friend of Swift and Pope and inventor of "John Bull," Samuel Garth, Mark Akenside, and Erasmus Darwin (grandfather of Charles). In the first half of the nineteenth century there was Peter Mark Roget, physician and savant, whose "Thesaurus of English Words and Phrases" finds a useful place on many a writer's bookshelf. John Brown, of Edinburgh, and Oliver Wendell Holmes, of Boston, were much-loved writers in the middle of the last century. After them came Silas Weir Mitchell, William Osler, Frederick Treves, and Ronald Ross, of the day before yesterday; and Henry Head, Axel Munthe, and H. H. Bashford of to-day.

Among the medical essayists and biographers Stephen Paget should perhaps be named here, because he had his plate up for years on a door in Harley-street and belonged to the staff of the Middlesex Hospital, though his heart was never really in the practice of medicine. There are also the medical historians and men of letters such as Norman Moore, Clifford Allbutt, and (still with us) D'Arcy Power, Raymond Crawford, and Andrew Macphail of Montreal. Nor must we forget the Victorian etcher and writer on art, Seymour Haden, who did his innumerable etchings in the spare time of a surgeon in active practice. To these men the arts, literary, historical, or pictorial, have been in greater or less degree the solace of their *hora subseciva* or by-hours. Few of them could be ranked as failed physicians, medical misfits, stickit surgeons. "Doctors, yet more than doctors" will perhaps serve.

But how difficult to draw a clear line. I hesitated whether to include John Keats with Campion and Bridges, and came to the conclusion that, like Oliver Goldsmith, this divine poet was truly a stickit doctor. Keats obtained the licence of the Apothecaries Society, but poetry was the only thing for which he really cared: "all other pursuits were to his mind mean and tame." High up on Parnassus, does his shade ever recall the drab mornings when he swept out the floor of the surgery of Mr. Hammond, to whom he was bound apprentice? Then we have the case of George Crabbe, physician, parson, poet; his practice at Aldeburgh was but a poor thing, and he gladly turned his back upon medicine. Goldsmith, Keats, and Crabbe, though they obtained medical qualifications, were unfitted to make use of them and soon dropped out. (There is some doubt about Goldsmith's M.B. but let that pass.) Charles Darwin, on the other hand, with ample family means at his back, gave up long before the final examination. The curriculum at Edinburgh failed to attract him; anatomy disgusted him, the operating theatre (in the days before anaesthesia) horrified him, and materia medica left on his mind "nothing but the memory of cold breakfastless hours on the properties of rhubarb." Robert Southey, poet laureate a hundred years ago, tried the study of medicine at Oxford, but found it or himself wanting and abandoned it in disgust. A later poet, Francis Thompson, had the same experience. Alfred Gilbert was a medical student before taking to sculpture, and perhaps gained something from his anatomical studies. Edmund Gosse came to London with the idea of reading for medicine.

Well, there they are: a random sample of stickit doctors who made good outside "the Physic Line." The list could be enlarged. In the time that remains I will leave literary allusions behind and offer a piece of worldly wisdom in the form of a short story. Here follows the fable or parable of a Stickit Doctor of the early twentieth century.

A Cautionary Tale

My contemporary—let us call him Y for short—was the nephew of a doctor, and it seemed right and natural to his widowed mother—and indeed to himself—that he should follow in the uncle's footsteps. Uncle William was a well-meaning but unimaginative man who had done tolerably well in the good old days of Victorian family practice in the "home counties." What way of life could be more appropriate for his young kinsman? So it was all tidily planned over the drawing-room fire by his elders when Y was in the Fifth Form. It never occurred to any of them to wonder whether Y was really cut out to be a doctor. Before leaving school he paid two visits to kind Uncle William, who gave him Gray's Anatomy, an old microscope, a box of bones, and some incomprehensible advice about elegant prescribing. In his first year of medical studies Uncle William died and a stranger bought the practice.

Having made a wrong choice of career Y fell into poor company. His fellow students were of all sorts, but those he chiefly mixed with took the short view. So he made a wrong approach to the science and art of medicine. He crammed for each examination and took many tumbles. No sooner did he jump a hurdle than he put behind him the facts he had got by heart and flung himself at new facts. Some of the facts turned out later to be fancies, but that didn't bother him: the exam. was the thing. He and his friends never perceived that the preliminary and intermediate subjects had a bearing upon the clinical part of the curriculum, to which they all looked forward. From beginning to end, right up to the final ordeal, he read nothing but "Aids" to this or that, and Synopses and short cuts of various kinds, and tried to memorise details in tabular form. His muddled reliance on "tips" was pathetic: they let him down time and again: *memoria technica* may be helpful to some of us, but Y often got the tip wrong at the critical moment in a "viva." When at length he reached the wards he became mildly interested in the patients and in the routine of clinical work. The spirit of the hospital got hold of him. But, as before, he lived from hand to mouth. He didn't read up his cases in Osler or Allbutt, and he let keener students finish off his cases or take his night duty. Need I say that he passed his midwifery examination at the first opportunity and then dismissed the subject from his mind?

In order to sum up Y's approach to the practice of medicine—his way of working for examinations—we may roughly paraphrase a description by Sir Theodore Mayerne of the habits of King James I. in matters of food and drink. He erred in quantity, quality, kind, order, time, and frequency. Poor Y, in short, took every wrong turning. He never even mastered the simple art of making a little knowledge go as far as it can be stretched. Examiners are human, and though it is said that you can't hoodwink them there is (or was) a method of persuading them to take the most charitable view of a candidate. Y didn't know that there was such a technique. He entered the examination room a minute or two after the clock struck nine, dazed and over-filled with undigested facts, after a frantic week of wet-cloth-to-the-brow reading. Five, or even ten, minutes spent in studying the paper and plotting out his three-hour course would have been well repaid. But no: Y started immediately upon the easiest question; ther. looking up at the clock too late he got flustered, miscalculated his time, left two awkward questions to the last quarter of an hour, and losing his head had to show up a blank sheet for one of them. The

and of thing happened during the laboratory at his papers he teased the long-suffering with endless repetition of one verb, "one adjective "marked," and one adverb ly." Then in the clinical examinations he put for a "spot diagnosis," throwing method in and forgetting that his main purpose was to prove that he knew how to go over and how to bring his observations to a focus, a little from his failures, which he put down as a check.

At last Y scrambled through the Final, only to find active life as a qualified doctor is full of traps and traps for the unwary. Dr. Douthwaite's little book "General Practice" was not then written, the British Medical Association had not published its handbook for the Newly Qualified nor THE B.M.A. its "Conduct of Medical Practice." In the week, before entering his name on the Medical Register or joining a medical defence society, he acted as a friend who was resident medical officer of one of the smaller hospitals—an institution supported wholly by voluntary contributions," the words of the Medical Act of 1858. And on its way back from the operating theatre to the surgery. When it came out at the inquest that the unregistered the coroner made some very remarks about Y and the hospital. A dozing Y woke up at this and his flying pencil made a copy for the lunch-hour edition of an newspaper.

Y will not wish me to follow Y through his life as a locum tenens in general practice of the district. But I might just recall the bad half-Dr. Z's dispensary in Shoreditch when Dr. Z turned found the stock mixture bottles nearly empty, the expensive tincture bottles nearly empty, and also the bad half-minute at Surbiton where A's best patient, Lady B, told Dr. Y what she thought of him for putting a pair of ice-cold hands on her treasured maid's abdomen. In her ladyship's opinion no examination of that kind was called for, it was unnecessary.

Y then went to the "death vacancy" which Y filled with borrowed money after superficial examination of the practice and no auditing of the books. He omitted to call upon the senior practitioner of the district or to mention his arrival to the secretary of the B.M.A. But at his first confinement in a lonely cottage on a winter night, his half-text-book knowledge failed him, and he turned to the senior colleague, a plain-spoken old man who was unaffectedly rude about "falling into a trap over a delayed first stage."

Y never learnt how to arrange his day's work, so he was often in slack times—and they were frequent—late for meals and unpunctual in attending at the cottage hospital to give anaesthetics or help at operation. He had a little stock of ready-made suggestions more or less by heart, but his attempts to apply one or other of these to the individual patient "case"—were not very happy. As for the general commercial travellers from the drug firms, electric-lamp makers and so forth, they found Y eager to try every unflinching synthetic remedy, every new piece of apparatus. On the other hand, Y was rather careless about keeping up with information from less interested quarters: he often forgot to read the newspaper and still more often forgot to read his weekly local newspaper—"What's the good of this prosy-brown stuff to me?"

Y would be wearisome to catalogue all the tactical mistakes that Y committed in the conduct of his work. There are very good doctors whose hold upon the patient and upon the patient's family is so firm that their shortcomings in the management of the practice do them little harm. Their personality and their professional competence make up for lack of aptitude in business. Not so with Y: he failed all round.

One evening an excessively female young person called on him after surgery hours and he saw her alone. The day the blackmailing mother dropped in for

a word with him. He belonged to neither of the defence societies, and had to employ an expert lawyer out of his own pocket to call the woman's bluff. This was a shattering experience. No wonder that when arranging for a consultation in those dark days he forgot to fix the fee beforehand, and heard with horror from Sir Thomas Guy Bart. on the patient's doorstep, that Sir Thomas's usual charge for coming to Muddleshire was—well, half this patient's income.

And now, to bring the sad story to an end, we reach an afternoon when Y, depressed and preoccupied, and all too conscious of the poor figure he was cutting in the medical profession, received a call from a plain but plausible stranger. This person paid without demur Y's modest fee for prescribing a course of colloidal cadmium (or it may have been vitaminised vanadium). Then he asked Y to sign his application for a passport. It was too late, he said, to hunt up a magistrate or a minister of religion, and the banks were closed: would the doctor oblige? All the particulars written on the form seemed to be in order; the photograph was painfully true to life; and Y fell into the trap. Thereafter meddlesome officials in England and abroad poked their noses into the matter. Police proceedings against the plausible stranger were followed by the appearance of Y before a tribunal, charged with putting his signature to a misleading declaration of "personal knowledge." They let him off with a grave caution, but Y had by now come to the conclusion that medicine was not his real job in life.

He understands dogs very well, and they tell me he has made quite a name in East Wessex as a breeder of Cairn puppies for the market. The explanation may be that a very sensible young woman took him and his affairs in hand just before it was too late, and now manages the household and the kennels with the tact and kindness and firmness which we all look for in a doctor's wife.

If I have over-coloured the case of Dr. Y, the moral is none the less plain. Anyone who seriously feels that he might become a stickit doctor should readjust his ideas, and if need be, rearrange his life—or else quit. But medicine offers many opportunities in diverse fields for different tastes and talents, and before turning his back upon it the man in doubt should take counsel with a wise and experienced elder.

DISTRICT NURSING IN ENGLAND AND WALES

AN interesting survey of district nursing in England and Wales, compiled by the Queen's Institute of District Nursing, provides a record of the district nursing service at present available throughout the country with details of its cost. Of the 62 administrative counties in England and Wales 60 are covered by county nursing associations, of which 10 are working independently and the remainder are affiliated to the Queen's Institute, and it is by the courtesy of the non-affiliated counties that information has been supplied which has rendered this survey complete. As is well known, the nurses giving domiciliary service are of two grades: (1) Queen's nurses, State registered, with an additional six months approved training in district nursing and if employed in midwifery the S.C.M.; (2) village nurse-midwives, i.e., certified midwives with some training in district nursing. The large part played by midwifery in the duties of district nurses is shown by the fact that during 1934, 68,519 midwifery cases were attended in England and Wales by 1019 Queen's nurses and 3068 village and other nurse-midwives. The maternal mortality-rate was 2.74 per thousand cases. During the period 1924-33, 606,545 cases were attended with an average mortality of 1.91 per thousand. Quite apart from midwifery there is increasing demand for trained home nursing care on the part of the medical profession, the local authorities, and the people themselves. A rough estimate made in 1926 suggested that, on a basis

DEATHS.

CARSMICHAEL.—On Oct. 24th, at Elvington, York, William John Carmichael, M.B., C.M. Aberd.

CRANE.—On Oct. 25th, at Kenilworth-road, Ealing, Horace Charles Frederick Crane, L.R.C.P. Lond.

FROST.—On Oct. 25th, at Lansdowne-crescent, W., William Adams Frost, F.R.C.S. Eng., Consulting Ophthalmic Surgeon to St. George's Hospital and the Royal Westminster Ophthalmic Hospital, aged 82.

PARK.—On Oct. 22nd, at Adel, Leeds, William Norris Park, M.B., C.M. Glasg., late of Carlton, Nottingham.

RUMBOLL.—On Oct. 23rd, at Melksham, Wilt., Charles Frederick Rumboll, M.D. Durh., J.P. D.J., aged 75.

SETTLE.—On Oct. 23rd, suddenly, in a nursing-home, Ian D. Suttle, M.D. Glasg., of Tavilton-street, W.C.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

ADDRESSES AND ORIGINAL ARTICLES

THE NEW PURPOSE OF MEDICINE*

BY SIR GEORGE NEWMAN, G.B.E., K.C.B., M.D.,
LATE CHIEF MEDICAL OFFICER, MINISTRY OF HEALTH

THE science of medicine as we think of it to-day has emerged slowly, since the dawn of human history, out of a vast and complex medley of human experience, social as well as medical. We, the practitioners of the healing art in one branch or another in the twentieth century, are the indirect descendants of magicians, astrologers, witch-doctors, and priests, and our formulated doctrines derive from primitive folk-medicine and its plant-lore, and from the superstitions, charms, and spells of the ancient world five thousand years before Christ. But we no longer seek guidance from the stars and comets; we do not believe that disease comes by caprice or is caused by evil spirits or angry deities; and we belong to a profession which have transmuted the herbalism, bone-setting, and rude surgery of former ages into a growing and ordered science and art. It is true that all through the centuries its emergence has been permeated, as now, by human fallibility, ignorance, and error, but the history of its advance is, with all its faults, the history of the discovery or application of certain fundamental principles leading to a fuller understanding of the nature of man, of disease and its causation, and of the ways and means by which disease can be controlled and man's survival on the earth made a little less insecure and more purposive. This has been accomplished by the arduous labours of a long line of diligent workers devoted to the search for truth and a way of life. Their journey has never been continuous and not always progressive; sometimes it has been isolated and individual, at other times it has been coöperative, winning the assent of the commonalty of men.

Let me at once commend to all students and practitioners of medicine the essential and invaluable study of this fascinating story of what Osler called "man's redemption of man," one of the greatest stories in the history of mankind, a story of high endeavour of man's mind to find out the secrets of nature and the means of their fuller discovery, interpretation, and use. The history of a science, according to Prof. Sudhoff, is the science, and without regard to history there can be nothing but confusion, misapprehension, and wasted effort in our undertakings.

When we recall the medical practitioner of the ancient world or of the Middle Ages, or even of the Renaissance of the fifteenth century, and contrast him and his profession with the practitioner of our own time, we shall be arrested by the reflection that we are living in a period in the history of man which is characterised by a profound change in the purpose of medicine amounting almost to a revolution. It is becoming more communal and preventive. Not only has there been an enormous advance in knowledge in all branches of medical science, greater in the last hundred years, let us remember, than in all the centuries which preceded them, but two other modern changes have altered the application of such knowledge. The State has also availed itself of such knowledge in the interest of the whole people; and the education of the people themselves has enabled them to appreciate the advantages of such knowledge.

It is these three factors which have given the student of this generation a wholly new orientation.

THE MEDICAL CHANGES OF A CENTURY

Looking back a hundred years to 1835, the year of the passing of the Municipal Corporations Act which set agoing the practice of local government as we know it, we see a very different situation as compared with to-day. The principal medical events which brought England to the year of the great Reform Bill were significant. When, at the end of the fifteenth century, Linacre returned from his sojourn in Italy he was inspired with the idea of reviving English medicine with the Hippocratic learning of the Greeks; he began with the translation of the Greek masterpieces as represented in the writings of Galen; then he established Lectureships in Medicine at Oxford (Merton) and Cambridge (St. John's); lastly, he persuaded Henry VIII. in 1518 to found the Royal College of Physicians in London to introduce Greek Medicine and to regulate the practice of English Medicine. Subsequently the College issued the first official pharmacopœia for the authorisation and scrutiny of drugs used in medical practice. A century later, in 1616, Harvey announced to the College his discovery of the circulation of the blood which began modern physiology; Thomas Sydenham (sometimes called the Father of English medicine) introduced Hippocratic principles into his practice in London; lastly, there was the wonderful contribution of the medical practitioners of the eighteenth century. They studied and explored the circumstances of epidemic disease, introduced medical notification, advocated personal hygiene, initiated industrial welfare, reformed midwifery and the care of childhood, established dispensaries, hospitals, and medical schools, and gave to the world both John Hunter and Edward Jenner.

When therefore England reached the Reform period and the Municipal Corporations Act of 1835, English medicine was well established. But it expressed itself almost exclusively in private practice, and what was needed was (1) to bring its values into the national polity, and (2) to enhance those values. We have been the living witnesses of those two processes. We have seen at first a steady, and recently an extremely rapid, development of the services of the doctor to the nation, and parallel with it an almost incredible advance in medical knowledge. The first step was that the Poor Law Commission of 1834 at Edwin Chadwick's instigation employed medical men to explore the social and physical conditions of the poor. Chadwick's report on the sanitary condition of the labouring population became at once, and has remained ever since, an authoritative presentation of the medical aspects and needs of the social life of the people. It was followed by a long series of public inquiries and royal commissions in which medical men played a predominant part. In the result the State set up a central health authority (formerly the Local Government Board and now the Ministry of Health) and divided the country into sanitary districts, each governing itself on lines laid down by Parliament, and concerned with sanitation, water-supply, sewage disposal, housing, nuisances, the suppression of the causes of disease, food inspection, and the correct certification of sickness and death, which found expression in the Public Health Act of 1875 and four score of subsequent enactments.

* Inaugural address to the Welsh National School of Medicine, delivered at the Institute of Physiology, Cardiff, on Oct. 5th, 1934.

It is significant that as these Acts succeeded one another their contents became more personal, more direct, and more medical, so that to-day the public health services administered by the local authorities and their numerous medical officers are concerned, not only with the subjects of external environment already mentioned, but with health and disease—e.g., industrial welfare, maternity, infant welfare, the school medical service, the cleansing of persons Acts, the direct treatment of communal diseases (including fevers, tuberculosis, venereal disease, rheumatism, blindness, and lunacy), the provision of institutions (clinics, hospitals, sanatoria, special schools for defective children), a health and unemployment insurance system, medical research, the education of the people in health, international sanitary laws, and the *imposition of statutory duties on the medical profession in behalf of preventive medicine*. How great has been the expansion is indicated by the official report of the Treasury of the fact that in 1900 the nation spent 31 millions on public social services in England and Wales (education, public health, lunacy, poor relief), whilst in 1932, 30 years later, the nation spent 430 millions on these services (including insurance and pensions). Here is a gigantic scheme of national, social, and health enterprise for the welfare of the people, and with this scheme the medical profession is now intimately associated as adviser or agent.

The growth of medical science itself since 1835 is scarcely less impressive than the social and communal impulses which we have noted. There was the introduction of anaesthesia, the "death of pain" as it was called, followed by antiseptic surgery, the defeat of sepsis, hailed as two of the great discoveries of mankind. From 1845 to 1860 came the new knowledge from the labours of Helmholtz, Virchow, Claude Bernard, and Darwin. In that same period there were begun three series of investigations which have carried us whole leagues forward; Claude Bernard proclaimed the constancy of the internal environment of the body maintained by its circulating fluids, Du Bois Reymond opening up the problem of nervous regulation, and Addison that of endocrinology, and the three problems have been advanced and in part resolved in our own generation. There was the rise and rapid advance of bacteriology which opened the door to the work of Pasteur and Koch and their disciples, and in the last twenty years of the nineteenth century the discovery was announced of the bacillary cause of typhoid fever, septicaemia, tuberculosis, glanders, pneumonia, cholera, diphtheria, tetanus, meningitis, plague, and dysentery, and a little later came the spirochæte of syphilis. In 1895 came the unveiling of the body by the X ray; in 1898 Manson and Ross discovered the cause and vehicle of malaria; in 1900 the Curies isolated radium; and in the last thirty years we have seen that man himself is no longer the microcosm but the cell of which he is built is the unit. The cell, its content, its function, and its secretion, has become so vitally important that by its smallest deviation man's body may be profoundly changed, or even destroyed, by its own household. The advance of bacteriology has not only revealed the aetiology and viruses of infective processes but has opened the doors of immunology far wider than did Edward Jenner, providing us not only with vaccines and serums, but with diagnostic means of clinically estimating immunity. Physiologists and biochemists have elucidated the existence and character of the hormones in the body, finding their amazing power of control of the body to be second only to that of nervous

regulation; and in the world of nature have similarly been disclosed the vitamins; and as a result, we are now furnished with chemical and biological means of treatment and prevention. In 1909 Ehrlich gave us salvarsan as the chemical answer to syphilis, and in 1922 Banting furnished insulin as the biological answer to diabetes, and to these must be added medication by thyroid, adrenaline, pituitrin, liver extract, &c. We have in three generations seen almost a *new body* unveiled for man, and have begun to learn how to control his life. Truly, we are living witnesses of what Sir Clifford Allbutt called "a new birth of medicine."

What does all this mean for us? It means that in our day the science and art of medicine has arrived at a new position of immeasurable gain and advantage as compared with the past. We can now become, if we will, fuller interpreters of Nature, the heralds and agents of powers of control of the body undreamed of by our forefathers. In a word, the new purpose of medicine is *the prevention of disease in the individual and the community, and the raising of the whole standard of physical life and human capacity*. Let me submit for your consideration three reflections.

I. THE MAINTENANCE OF HEALTH

First, the art of medicine must direct its energy and knowledge to the maintenance of health. One of the recent changes that has come over the teaching of medicine is the necessity of studying anatomy, physiology, and even biochemistry in the normal living body, for the cadaver cannot be a vital index. We know that disease is a disharmony of the living body, its discomfort and dis-ease, its reaction to the constant internal environment of Claude Bernard and to the variable external environment which surrounds us—soil, air, water, climate, occupation, habits, and the agents of infection. One of the great lessons of the Greeks was that the body itself could often harmonise its disharmony, provided it could function normally. Now the normal body requires two natural conditions for its survival, functioning, and health—viz.: *nutriment* in the form of oxygen and nutritious food, and effectual *exercise* of all its parts and faculties. From the earliest times, however, the custom and education of the medical man has concentrated on morbidity, and this was reasonable as disease is the enemy of health. But it is not the only enemy, not the only criterion or agency of disharmony. There may be physiological disharmony. My submission is that doctors should enlarge the narrow purpose of directing their almost exclusive attention to morbid conditions and the remedy of such conditions mainly by means of drugs. Unfortunately this tendency in professional custom has misled public opinion, and the patient himself becomes accustomed to think in terms of disease and of drugs. Hence, there has arisen a pernicious and false reliance on the "bottle of medicine" or its proprietary patents. Literally, millions of pounds are being thus expended; in 1934 57 million prescriptions were issued under the Health Insurance Act. Drugs are sometimes necessary and a pharmacopœia is required. But medication by drugs is, like patriotism, not enough (or easily too much), and we must not lose our way in this direction, or surrender our common sense and neglect our new knowledge and better methods. If I may say so, the widespread fetish of quackery in its manifold forms may be partly due to the unconscious misdirection of doctors themselves. People are beginning to feel that they need something more than the doctors are giving them and therefore look elsewhere.

Thus a reaction is setting in. On all sides the community is begging for instruction and guidance from the medical profession as to health, something much larger than the negation of disease. On scientific grounds we know the common sense of this demand, and we should do wisely to meet it more fully. We know it is sound, because health of body means increase of capacity, physical and mental, for work and for the enjoyment of life; it means a stronger and better population, now and in the future; it means increased power to resist or overcome disease; and it means the prolongation of life and the postponement of death. I should like to see two things happen. First, that in every medical school there should be definite and skilled instruction in the applied physiology of the *nutrition* of the body (including dietetics), of ways and means of the effective oxygenation of the body, of *assessment of fitness*, physique, and capacity, and of all forms of *physical education*. This would encourage both the doctors and their patients in the new orientation of medicine. In some medical schools this is already undertaken, but it should be universal, and taken in hand by a clinical physiologist. Secondly, that every medical practitioner should actually include the practice of this form of clinical medicine. Mark this fact, *every patient needs health guidance*. Directly or by implication every patient, coming for the first time to his doctor, asks these four questions: "What is the matter with me; can you cure it; how long shall I have it; how can I avoid getting it again?" Here is diagnosis, treatment, prognosis, prevention. Each of these questions is of importance to the patient, but I invite you to consider the vast realm of medicine, and of invaluable service to the patient, which opens before you in providing a correct answer to the fourth question. In passing, you will observe that the patient, following his primitive ancestors, thinks of his malady as "it," something separate from himself an entity, an unlucky acquisition. But as we all know his malady is himself, a personal disharmony of his total ego. Disease is rarely singular, and perhaps never an entity. It is the man himself, his heredity, temperament, habits, way of life, perhaps even his religion, that is your patient.

Does the average busy practitioner actually advise upon or prescribe for the patient's way of life, his ineffectual use of diet (food and drink), fresh air, exercise, and rest? Has the doctor carefully considered the *physiological effect* of these five factors on his patient, on his heart, lungs, stomach, kidneys, on his nervous system, or his endocrine glands? Does he really answer the patient's fourth question, or does he evade it? Does not part, or the whole, of the patient's malady lie quite beyond medication by drugs? Is it not expedient that the patient, and indeed the normal person, should be able to obtain sound advice on health from the medical profession? Should not every practitioner be a missionary of health and prevention, a doctor and teacher of his patients in the true sense? It is certain that he could do more good in five minutes with his patient than any other educational agency, formal lectures, textbooks, or Acts of Parliament. In a word, I have been long convinced that medical practitioners ought to be, and often are, the first effective teachers of hygiene to a people, the principal interpreters of preventive medicine in England, for through their hands pass one-third of the whole population every year.

II. THE STATE AND THE DOCTOR

This leads me to my second reflection: As the nation has found by experience that the medical

profession is an invaluable ally in its schemes of governance, so it has increased its obligation upon them to serve the nation in preventive medicine. It began under the Tudors in 1511; by the Poor Law of 1601 the "parish doctor" was called upon to render medical relief to the statutory poor; and in the eighteenth century the State sought the advice of medical men in behalf of the national health. In 1838 the Poor Law Commission employed medical men to investigate the incidence and causes of fevers and other diseases, which were creating destitution; and in 1840 for public vaccination. A few years later came the appointment by local authorities of medical officers of health. From that time to the present, Acts of Parliament have greatly increased the statutory duties of registered medical men in respect of preventive medicine. They are required by law (1) to certify births, deaths and the causes of death; (2) to certify the occurrence of the major infectious diseases; (3) to certify cases of industrial poisoning; (4) to certify the existence of verminous children; (5) to observe the regulations affecting the issue and dispensing of prescriptions containing dangerous drugs; and (6) to give medical assistance in emergency at the request of a midwife. These obligations are made compulsory by the State on the assumption that every registered medical man is *competent* to determine the cause of death, able to diagnose all forms of infectious disease and industrial poisoning, knows the requirements of the Dangerous Drugs Acts, and is skilled in the diagnosis and treatment of obstetrical complications. Each of the six has preventive medicine in view. To these six must be added a number of corresponding liabilities. Any registered medical man may be called upon under Act of Parliament to vaccinate against small-pox, to act as a school doctor, a medical officer of health, or a medical officer for tuberculosis or venereal disease, to diagnose all forms of mental disease or deficiency, to certify and define public nuisances, to furnish factory and workmen's compensation certificates, and to provide on demand medical treatment for Poor Law or insurance patients. Again, most of these potential duties are preventive in purpose.

One of the most effective means of preventive medicine is the national health insurance scheme. This is a coöperative organisation between insured persons, the friendly societies, the medical profession, and the Government, especially designed for "insurance against loss of health, and the prevention and cure of sickness." The scheme is preventive in aim, and is proving to be so in practice; it is controlled by medical and lay coöperation, the greatest scheme of medical collective responsibility yet tried in Britain. Consider what is happening. Sixteen thousand doctors (some 70 per cent. of the medical practitioners in England and Wales) have agreed to accept their right (which they need not exercise), under the Act to give *preventive* and curative advice and treatment to sixteen million insured persons. The doctor is paid for each person on his panel, whether he becomes a patient or not; the patient has free choice of his doctor, and may come at the very beginning of his sickness, without let or hindrance, undeterred by any question of fee; the doctor's duty is to diagnose and treat the illness, the facts of which must be recorded by him; he inquires as to causation, because it pays him best for his client *not* to be ill; he must estimate resultant incapacity, because that is necessarily the basis of benefit; and he must treat effectively, for a dissatisfied patient changes his doctor. There is some imperfect work

no doubt and some complaints (as in all medical practice) in a scheme so vast though as yet incomplete, but taken as a whole this system provides medical services for half the adult population of the realm—and infinitely better than under the former "club" practice—and there need be no doubt whatever as to its preventive value.

Here are quoted a score of Acts of Parliament with as many amending Acts, most of them dealing with clinical duties and all of them designed not to control the form or character of the treatment of disease, but to ensure its *prevention*. In 1933 (the latest year for which figures are available) there were certified by medical men upwards of 330,000 cases of infectious disease, the cause of 496,000 deaths, and seven or eight million insurance patients as to "incapacity" and claims for benefit. Of this third group there were referred back to the Ministry of Health by approved societies and insurance practitioners 540,000 cases for decision or consultation, a very significant figure. Upon this national system of correct medical registration of sickness, prognosis, and death depends the fabric and effectiveness of the public health service of England and Wales. Innumerable difficulties and dislocations of public welfare follow in the train of inaccurate diagnosis of sickness, mistaken assessment of physical fitness, or the incorrect certification of the causes of death.

III. NEED FOR MORE PREVENTIVE MEDICINE

The last reflection I submit for your consideration is this. Although the death-rates in this country are exceptionally low, and lower than in most countries of the world, and the national health has steadily improved and stands higher to-day than at any previous time in our history, and although England has banished leprosy, plague, cholera, epidemic enteritis, endemic scurvy, typhus, and other scourges, and although the nation is spending lavishly on social welfare, there is still great need for further progress in preventive medicine and its research. We have as a nation by no means solved all our health problems, and our industrial and social evolution seems to bring new ones. The physique of children, although improving, leaves much to be desired, and that of youths from 14 to 18 years of age shows some signs of actual deterioration in certain districts; nutrition has steadily improved, but is still very unsatisfactory in some groups of the population; the common cold, bronchitis, and dyspepsia continue prevalent, costly, and disabling, yet all three are among the most preventable of maladies; influenza, "rheumatism," and cancer remain undefeated, and diseases of the heart and circulation claim 130,000 lives a year (much the highest certified cause of death); maternal mortality remains static at about 1 death in 200 mothers confined and shows as yet no reduction; the dental condition of the people is very much below par and results in unfortunate sequelæ; and too much attendance upon the sick is directed merely to drugs and ineffectual advice rather than to personal hygiene and a sound way of living. It must be added that the burden of incapacitating sickness and accident continues to be unduly heavy, costs the nation annually millions of pounds, and deprives industry of many thousands of years of lost time from work—in 1933, 29 million weeks were thus lost. The great bulk of this current sickness and accident is directly preventable by a sensible, intelligent, and civilised people, but it is not prevented. These are serious facts for the consideration of the profession. We cannot ensure a healthy nation only by "bottles of medicine," modern surgery, and artificial immunisa-

tion. A fuller and deeper appreciation of positive and constructive health is necessary.

In the light of these facts I venture to hope that the medical profession will steadily continue to close its ranks and work together as one body for the unity of medicine. It has in practice two aspects or wings, curative and preventive, between which there is now no call whatever for any sort or degree of conflict or competition. They are complementary and belong to each other, as the wings of a bird. *They need each other, and the community needs both.* Moreover, the medical practitioner is the outpost of both. We must use the new knowledge so rapidly extending in order to serve the national health. In doing so, we should remember that the social, æsthetic, psychological, and religious aspects of man's health or wholeness cannot wisely be disregarded. They form an integral part in the formation of those common standards of aspiration, discipline and conduct, so greatly needed by the nation to-day, and so essential to national health. Among such standards, to be accepted by the public and to be vigorously supported by the medical profession, none seem to me to be more vitally important than the urgent national need for the physical and health education of youth. Some other nations are rapidly providing this by order of Government. If we in Britain do not thus provide it by Act of Parliament the obligation upon our voluntary service is all the greater.

CONGENITAL AND RECURRENT DISLOCATION OF THE PATELLA

TREATED BY TRANSPLANTATION OF THE PATELLAR
TENDON

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AMONG patients presenting themselves on account of mechanical defects of the knee-joint a small group is found to be due to malpositions of the patella. The most common is that known as "slipping patella," in which recurrent dislocation occurs, almost always on to the external femoral condyle, when the knee is fully extended. There is rarely any difficulty in reducing such dislocations, but the frequency of the occurrence results in a serious disability which needs some sort of operative measures for its relief.

Less commonly the dislocation is a permanent one, the patella occupying a position on the outer side of the external condyle of the femur, from which it cannot be manipulated into the intercondylar groove. In association with this defect a variety of other deformities are usually present in and around the knee-joint. Such are a subnormal development of the prominence of the external condyle of the femur; insertion of the patellar tendon into the lateral aspect of the upper part of the shaft of the tibia; absence of the normal projection of the tubercle of the tibia; and varying degrees of dystrophy of the patella itself, amounting in extreme cases to complete absence of this bone.

Permanent dislocation of the patella, with or without dystrophy, is not attended by recurrent disablement as is a "slipping patella," and is indeed compatible with a surprising degree of efficiency of the knee-joint. Nevertheless appreciable loss of power of extending the knee-joint, together with persistent pain, presumably due to the abnormal stresses to which such a joint is subjected, are

sufficiently embarrassing to the patient to justify operative treatment, if something like normal function can thereby be obtained. That this is indeed possible by means of a relatively simple operation is shown by the case (No. 1) reported below.

There can be little doubt that the deformities which we are considering are of congenital origin. In a considerable number of the recorded cases the condition appeared to be hereditary, being recognised in several generations of the same family.^{1,2,3} The interesting suggestion was made by Malkin⁴ that congenital dislocation of the patella might be considered to arise as a consequence of the adoption of the erect posture by man. Man alone stands with the knees fully extended. In order that the tibiae shall be close together and parallel in this position, the inward inclination of the femora, making their axes converge toward the knees, is neutralised by the tibiae being set at a slight obtuse angle outwards with the femora. This angle, as is well known, disappears when the knees are flexed. The quadriceps muscle, with its insertion via the patellar tendon, shares in this angular conformity of the limb, and in full extension winds outwards around the projecting anterior surface of the external condyle of the femur, as around a pulley.

Malkin draws attention to the fact that in the sheep and the ox, which walk with bent knees, the internal condyle of the femur is more prominent than the external, that in the gorilla the two condyles are approximately equal, and that in man alone is the external condyle the more prominent. He supposes that a subnormal development of the external condyle would, at the first full extension of the knee-joint, allow the patella to slip laterally out of the intercondylar notch on the external aspect of the femur, where it is subsequently found in cases of congenital dislocation.

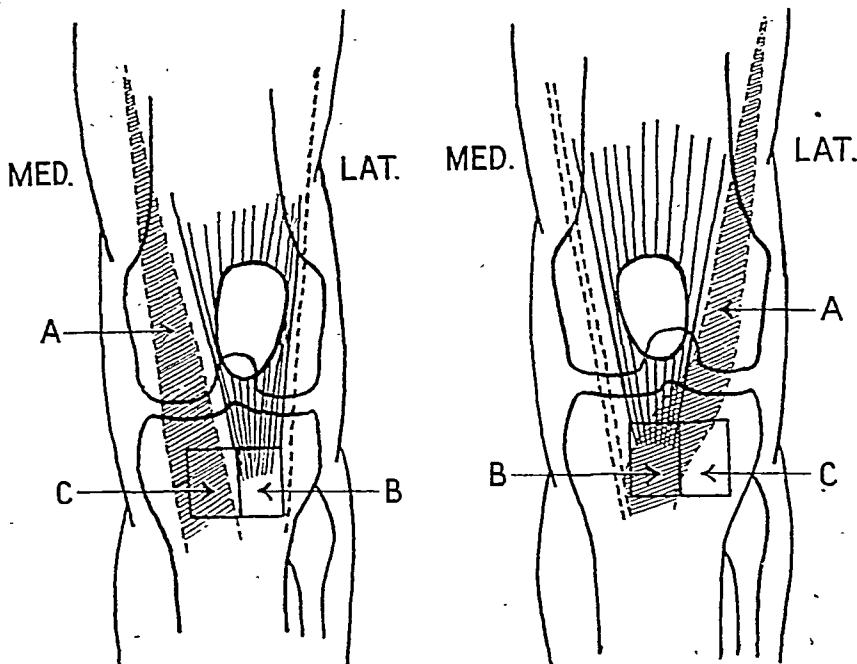
TREATMENT

Various methods of operative treatment have been

advocated for dealing with dislocation of the patella. The operation which has given uniformly successful results in the cases here reported is based on the principle of displacing the insertion of the patellar tendon to a more medial position on the tibia, so giving a new line of direction to the quadriceps muscle and patellar tendon. The patella is thus brought permanently between the femoral condyles. At the same time a pedicle graft is taken from the inner side of the joint capsule and transplanted into the outer side of the capsule. The resulting narrowing of the inner side of the capsule serves to anchor the patella in its new position.

The essential steps of the operation may be summarised thus:

1. An incision is made along the outer side of the knee, curving inwards at the lower end.
2. The skin and subcutaneous tissue are reflected off the front of the knee-joint.
3. The patellar tendon is defined, and separated from the rest of the capsule by medial and lateral incisions which open the knee-joint. On the medial side, a Λ -shaped strip of capsule and synovial membrane (Fig. 1a) is isolated, and left attached by its base to the front of the tibia.
4. A square of bone (B), which includes the insertion of the patellar tendon, is lifted by saw and chisel cuts from the front of the tibia.
5. A second square (C), of exactly similar size, is removed from the front of the tibia immediately medial to the first one (B).



FIGS. 1 and 2.—Illustrating the operation of transplantation of the patellar tendon.



FIG. 3.—Photograph of knees before operation, showing position of small laterally placed patella (Figs. 3 to 6 illustrate Case 1).

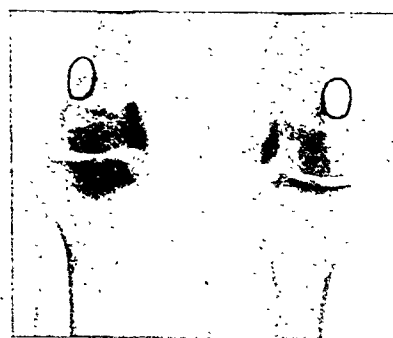


FIG. 4.—Radiogram of knees before operation. The shadow of the small laterally placed patella has been outlined for greater clearness.

6. The squares of bone are replaced so as to transpose their positions, thus giving a more medially situated insertion to the patellar tendon (Fig. 2). The secure wedging in position of these two squares of bone obviates the use of any screws.

7. The opening thus left in the medial side of the capsule of the knee-joint is closed with a continuous catgut suture.

8. The Λ -shaped strip of capsule (A) is swung over to the lateral side of the joint, and sutured so as to fill the gap on that side. The last two steps result in a reduction of the width of the capsule on the medial side. The Λ -shaped strip (A) crosses the new insertion of the patellar tendon, and as it is here sutured to the aponeurosis, it helps to keep the detached squares of bone (B and C) in position.

9. The skin wound is closed by interrupted silk-worm gut stitches. The limb is immobilised on a splint until the sutures are removed, when massage of the quadriceps is commenced.

The operation, thus performed, closely resembles that described by Wagner,⁵ who however does not include the synovial membrane in his Λ -shaped strip, and so avoids opening the joint.

Following are reports of three cases.

I

A. B., male aged 27 years, labourer, was admitted to the General Hospital, Birmingham, on June 15th, 1932.

History.—There were no symptoms until the age of 14 years. He was able to play football at school. He had been troubled by pain and "stiffness" of both knees for the last 13 years, but this had become much worse of late. Nine brothers and sisters were all normal.

Examination.—The following points were noted: Prominence of internal condyles of femora, absence of tubercles of tibiae, very small patellae situated on the outer aspects of the knee-joints (Fig. 3). Passive movements were free and painless, and a full range of flexion and extension was obtained. Active extension of the



FIG. 5.—Photograph of left knee before operation, showing maximum degree of active extension possible in the sitting position, and position of small laterally placed patella.

knee from the sitting posture was severely limited. Fig. 5 shows the maximum degree of active extension possible before operation.

X ray (Fig. 4) shows: Hypoplasia and external dislocation of patellae, absence of tubercles of tibiae, and genu valgum.

Operation, as described above, was performed on the right knee by Mr. Leather on June 21st under general anaesthesia.

Results.—Fig. 6 is a photograph taken more than two years after the operation. It shows that the knee can now be fully extended by active muscular contraction, without dislocation of the patella from the intercondylar groove. The knee has not been painful since the operation, and has shown no tendency to give way.

The operation on one knee only has caused such an improvement in the patient's gait and stability,



FIG. 6.—Photograph of left knee after operation, showing restoration of full range of active extension of the knee-joint.

that he is now able to follow his occupation without difficulty. It is proposed to perform a similar operation on the other knee at a later date.

The two following cases are quoted as examples of the successful treatment of recurrent dislocation of the patella by the operation as described above:—

II

C. D., female, aged 17 years. Admitted Sept. 25th, 1932.

History.—Recurrent dislocations of left patella during the past 12 months. This first occurred as a result of jumping and landing heavily on both feet.

Examination.—There was abnormal laxity of the capsule of the knee-joint. The patella could easily be dislocated outwards.

Treatment.—Massage and faradism to the vasti caused no improvement.

Operation.—By Mr. Leather, Sept. 27th; transplantation of insertion of the patella tendon.

Result.—There had been no recurrence of the dislocation 18 months after the operation. All movements of the knee-joint were free and painless.

III

E. F., male, aged 20 years. Admitted to the General Hospital, Birmingham, Oct. 28th, 1933.

History.—Attacks of pain had occurred in the right knee, since it had been injured in falling off a bicycle six months before admission. At 5 years of age—operation for genu valgum.

Examination.—Right knee—patella permanently displaced to outer side of knee-joint. Movements were free, but some grating was felt.

Operation.—Nov. 3rd, by Mr. Leather. Transplantation of insertion of patellar tendon.

Result.—Movements of knee-joint free and painless. Patella has remained in the intercondyle groove.

I am much indebted to Mr. J. B. Leather, for permission to record his cases, and to Dr. Harold Black for the radiograph.

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THE THERAPEUTIC APPLICATION OF PHENYLMERCURIC SALTS

OBSERVATIONS ON THE USE OF BASIC PHENYLMERCURIC NITRATE IN GYNÆCOLOGY

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Robert Otto,¹ a German chemist, synthesised phenylmercuric nitrate (now known to be basic phenylmercuric nitrate) in 1870. For over half a century this substance was neglected. Some of its chemical properties were known, but it was not until sixty-one years later, in 1931, that Weed and Ecker² (after four years' investigation) reported the successful preparation of this and other phenylmercuric compounds in a purified state. They pointed out that basic phenylmercuric nitrate combines a very high bactericidal potency with a relatively low local and systemic toxicity for animals and for man; that very high dilutions of an aqueous solution exert a strong disinfecting and antiseptic power on bacteria and moulds; that its effectiveness is not impaired by the presence of tissues or tissue juices; that it is very slightly irritant on local application to wounds and most mucous membranes; that it has no odour and colour and does not stain; and that it does not corrode surgical instruments.

In 1932-33 Weed and Ecker^{3,4} reported further on the chemical and biological properties of the phenylmercuric salts, and in 1933 Birkhaug⁵ independently confirmed their original work. He stated:

"Because of its high bactericidal action, low toxicity, general diffusibility and inability to precipitate serum or tissue proteins (basic) phenylmercuric nitrate appears to be useful in the production of bacteriostatic action in the biliary, cerebro-spinal, genito-urinary and vascular tracts. The alcohol acetone aqueous 0.034 per cent. tincture of (basic) phenylmercuric nitrate has a superior value as an efficient non-deleterious and powerful pre-operative skin disinfectant. This mercurial solution is relatively free from the many objectionable features of tincture of iodine and the alcohol acetone aqueous 2 per cent. solution of mercurochrome."

The Council of Pharmacy and Chemistry of the American Medical Association,⁶ in a preliminary report on basic phenylmercuric nitrate and phenylmercuric chloride, stated that:

"Test-tube experiments have shown that (basic) phenylmercuric nitrate is a powerful germicide and fungicide of wide ranging effect and relatively low toxicity. Fewer tests have been made with phenylmercuric chloride, but it seems likely that the two compounds are equally active. Experiments with animals indicate that the ingestion of (basic) phenylmercuric nitrate may lead to strong bacteriostatic and bactericidal effect in the blood, cerebro-spinal fluid, bile, feces and urine. It seems to be clearly indicated that (basic) phenylmercuric nitrate can disinfect skin, disinfect instruments without corroding them and preserve biologic products against bacterial growth without destroying their specific properties and actions."

In 1933 Armangue and Maestres,⁷ working in Barcelona, Spain, reported a new technique for the synthesis of phenylmercuric salts. Hatfield,⁸ in 1932, studied 16 mercurials, including two of the phenylmercuric salts and their particular effectiveness against wood-destroying fungi. He showed conclusively that the effectiveness of basic phenyl-

mercuric nitrate and phenylmercuric chloride was markedly superior to that of all the other mercurials studied. In 1934 Pyman and Stevenson⁹ demonstrated that the phenylmercuric salts used in the investigations of Weed and Ecker and of Birkhaug were the basic salts, the compound thought to be the nitrate actually being $C_6H_5HgOH \cdot C_6H_5HgNO_3$.

In a second publication Armangue and Maestres¹⁰ reported on the construction and bacteriological properties of other phenylmercuric salts. They prepared the benzoate, borate, lactate, citrate, phenate, phosphate, oleate, oxalate, picrate, salicylate, sulphate, and tartrate in addition to the previously constructed chloride and basic nitrate. All these salts were studied for their bacteriostatic and bactericidal effects on 13 species of organisms. Because of the fact that it was found to have the least irritating effect and that it was more soluble than the basic nitrate, these investigators chose the borate for extensive clinical studies and found this particular salt superior to anything thus far developed. Armangue and Maestres stated that: "Clinical trials on the practical utility of (phenylmercuric borate) attempted by a legion of investigators has given astounding results which indicate that the (phenylmercuric borate) is an acquisition of positive value in human therapy."

In January, 1935, Stark and Montgomery,¹¹ working with basic phenylmercuric nitrate, indicated that the active bactericidal component was the C_6H_5Hg ion and stated that this differed from other organic mercurial compounds used as antiseptics in that the mercury atom was in the cation. Since bacteria are usually negatively charged, this positive charge of the phenylmercuric ion may be a factor in its high inhibitory power. Bacteriostatic effects were studied by the methods of Kolmer as modified by Birkhaug. Their results confirmed the findings of Birkhaug in which the latter showed the extremely high inhibitory powers of this salt when small numbers of organisms were employed. The germicidal effects were determined by the Shippen modification of the Food and Drug Administration method.

In comparing phenylmercuric salts as prepared by the method of Weed and Ecker and the same products as prepared by methods used by some commercial manufacturers, it is highly important to note that, as pointed out in the report of the Council on Pharmacy and Chemistry,⁶ Weed has expressed the opinion that the compounds obtained from several manufacturers are not as satisfactory as the compounds prepared by him or according to his method under the supervision of himself and Ecker. The basic phenylmercuric nitrate used in my own work was originally provided by them, and the subsequent material in a similarly highly purified form was furnished by the Hamilton Laboratories, Inc., Hamilton, Ohio, who market this product at present under the trade name Merphenyl Nitrate (Basic).

In 1931, at the request of Dr. Ecker, I undertook a study of the use of this product in gynæcology. The opportunity was given to me of treating 100 cases of specific and non-specific endocervicitis and associated conditions both at Mount Sinai Hospital and at the House of The Good Shepherd in Cleveland. The results¹² showed an invariably favourable response in all the conditions encountered, both specific and non-specific, except when *Trichomonas vaginalis* was the inciting agent. It was noted that the character of the infection could be changed, often by a single application, and that even when complete and rapid clinical recovery was not attained

there was enough improvement to allow of the successful use of adjuvant treatment. In effective concentrations, both as local application (1:1250) and as a douche (1:25,000), basic phenylmercuric nitrate was non-toxic, and almost non-irritant to the vaginal mucous membrane, and it proved effective in the presence of tissues. When it was used persistently as a douche the patients did not develop symptoms of mercury poisoning and the output of mercury in their urine was negligible.

Miss N. E. Schreiber, of the department of pharmacology, Western Reserve University, determined by a highly sensitive microchemical method the mercury content of 24-hour urine specimens from patients in this series of cases who had been douching with the 1:25,000 solution once or twice daily for six weeks. In three specimens examined the mercury output ranged from 0.008 to 0.014 mg. Judging from the work of Sollmann¹² and his associates, this represents an entirely negligible output. Where significant quantities of ionised mercury are absorbed, as in lactic therapy, the urinary excretion of the metal is very much greater than that found in these cases.

In this paper I wish to report the results of the subsequent use of basic phenylmercuric nitrate in private as well as dispensary practice.

CONDITIONS TREATED AND METHOD OF TREATMENT

Of the 63 cases reported here, 41 were seen in the dispensary and 22 in private practice. The former comprise 11 cases of vaginitis in children (5 gonorrhœal and 6 due to a mixed infection, including 1 due to *B. coli*), 13 cases of *Trichomonas vaginalis* infection in adults, 14 cases of endocervicitis (7 gonorrhœal and 7 non-specific), 1 case of recto-vaginal fistula, 1 case in which a slough followed vaginal hysterectomy, and 1 case of paracervical sinus with infection following cauterisation. The latter group consists of 11 cases of gonorrhœal endocervicitis, 2 of trichomonas infection, 4 of non-specific vaginitis, 4 of non-specific endocervitis, and 1 case of tinea infection involving the perineum and labia.

Certain changes in technique have been made since my preliminary report.¹²

The basic phenylmercuric nitrate used in the treatment of all the present cases was an aqueous 1:1500 solution. That given to the patients for dilution in the preparation of the douche was a 1 per cent. solution in diethylene glycol. The latter was dispensed in 2-oz. bottles and the patients were advised to use a drachm (4 c.cm.) to a quart of comfortably warm water, making approximately a 1:25,000 solution for use as a douche. The use of a tampon saturated with the concentrated aqueous solution was discontinued and treatment was confined to the cleansing of the urethra, vagina, and cervix, the instillation of basic phenylmercuric nitrate (1:1500) and the use of the daily douche as described. The necessity for douching slowly and thoroughly in the semi-recumbent position, preferably in the bath tub, was stressed. In addition, each patient was questioned as to her method of cleansing following bowel movement and in those cases in which the method was faulty, proper instructions were given to prevent faecal contamination of the introitus. It is surprising to note the tremendous number of women and girls both in dispensary and private practice who have never given a single thought to the proper method of cleansing the anus after defecation.

In the treatment of vaginitis in children the following method was used:

The labia were separated and an endoscope was inserted where possible. A smear was taken by inserting a very small, dry, sterile swab into the vagina. Subsequently, a blunt 2 c.cm. syringe was used to instil approximately 1 or 2 c.cm. of the 1:1500 solution of basic phenyl-

mercuric nitrate directly into the vagina. The hips were elevated for a few minutes to prevent the medication from running out. The mother of the patient was instructed to make a 1:25,000 solution of basic phenylmercuric nitrate (as outlined above) and by using an infant enema tip or a soft rubber catheter to irrigate the vagina once or twice daily using a pint of the solution each time. In order that the mother might fully understand the method, a visiting nurse was sent to the home the first day to instruct her in the technique.

VAGINITIS

Eleven cases of vaginitis were seen at the dispensary of Mount Sinai Hospital in children ranging from 4 to 15 years of age. Five were clinically and microscopically gonococcal in origin; one was due to *B. coli*, and the remaining five were non-specific microscopically. When treatment with basic phenylmercuric nitrate began the infections had been present for 1-6 months, and all but one had had at least one other form of treatment (usually hexylresorcinol instillations). The success obtained with the new remedy was really gratifying. The severest cases were free from subjective symptoms within a very few days, and I have been able to discharge these youngsters, with no signs or symptoms and with negative smears, as soon as six weeks from the onset of treatment. Strange as it may seem, the cases of specific vaginitis cleared up a good deal more quickly than the non-specific. Two cases in the latter group had been reinfected.

One was a child of 6 whose original infection cleared up in six weeks. She remained symptom-free for four months, and then returned with a reinfection, again non-specific. A second course of treatment as outlined produced a cure in three and a half months. The second child, aged 10, also had a non-specific vaginitis. After eight weeks of treatment she remained symptom-free for three months, but returned with a reinfection; this was completely eradicated by intensive therapy in two months.

In both cases the reinfection was attributed directly to improper cleansing of the anus after defecation. Both children have now been symptom-free for 18 months.

A typical case will serve as an example of this group.

A girl, aged 11, was referred to the gynaecological service from the paediatric service, Nov. 21st, 1933, because of a persistent vaginal discharge of three weeks' duration. Vaginal smears taken on the first visit to the gynaecological dispensary were positive for gonococci. This youngster had no previous treatment of any kind. Following the method as outlined herein, therapy with basic phenylmercuric nitrate was instituted. On the second visit four days later the mother reported a very definite lessening of the discharge, with a change in colour from a yellow-green to milk-white and a change in viscosity from tenacious to watery. Endoscopy corroborated this report. Continuation of the intensive treatment until Dec. 4th, 1933, permitted the child to return to school symptom-free. After four more weeks of treatment in which the intervals between treatments and douches were gradually lengthened, she was discharged. Six months later she was still free from symptoms and vaginal smears were negative.

In private practice I encountered 4 cases of vaginitis, non-specific in origin, 3 in adults and 1 in a child. The former group comprised a case of senile vaginitis with secondary infection, a case of vaginitis following the prolonged use of a Smith-Hodge pessary, and a case of vaginitis due to faecal contamination. In all of them instillation of basic phenylmercuric nitrate with daily douching made the patients free from signs or symptoms. A case of

chronic vaginitis recently reported by Hitchings¹⁴ bears out my contention that basic phenylmercuric nitrate will change the character of the infection within 24 to 48 hours. Although it may not always be possible to clear up the source of the infection, as in deep-seated chronic cervicitis, the use of this antiseptic will improve the patient subjectively and objectively and will permit the successful use of adjuvant treatment.

TRICHOMONAS INFECTION

In a previous report I mentioned that the use of basic phenylmercuric nitrate in two cases of *Trichomonas vaginalis* infection gave poor results. Thinking that prolonged intensive therapy might prove effective, I reinvestigated this problem. A total of 15 cases, diagnosed microscopically, were treated by instillations of basic phenylmercuric nitrate three times weekly and the use of douches twice a day. Of this number, 13 were seen at the dispensary and 2 in private practice. In each case the urine, as well as the vaginal discharge, was examined for the protozoan. In 2 cases of recurrence the stools were checked in a similar manner. Realising that reinfections are common in this particular condition and that, it has been said, about one-fifth of these arise from faecal contamination, I thought it advisable to be particularly careful in pointing out to these patients that the utmost care must be taken in cleansing the anal region following defaecation.

Among the dispensary cases the most rapid recovery occurred in a 35-year-old patient who was seen for the first time on Nov. 8th, 1933, with a typical thin, frothy, greenish-yellow discharge and punctate hæmorrhagic areas in the cervix and adjacent areas; examination of a hanging-drop preparation revealed the presence of *T. vaginalis*. She had had no previous therapy. Treatment with basic phenylmercuric nitrate was instituted and one week later the patient was much improved. The inflammatory process had cleared up completely and there was only a very slight milky leucorrhœa around the cervix. Ten days later the patient had no discharge; the cervix and vagina looked normal. A smear and a hanging drop were negative. She was instructed to continue basic phenylmercuric nitrate douches daily for one month, at the end of which time smears were again negative. She was discharged and has remained well for fifteen months.

Of the 13 dispensary cases, 6 had previous therapy directed against the *T. vaginalis*. These included the 2 cases mentioned in a previous report.¹² This therapy consisted in the use of hexylresorcinol, acriflavine, potassium permanganate, picric acid, merthiolate, and powdered quinine. These cases were then treated with basic phenylmercuric nitrate as outlined. Three made what appeared to be complete recoveries in three and a half to six months and have remained negative since June, 1934. Three cases showed similar early results. One patient remained away after one month's treatment and returned six months later with either an exacerbation or a reinfection. She cleared up after three months of intensive treatment. The other 2 cases remained negative for three and five months respectively and returned with reinfections. Return to therapy plus proper cleanliness after bowel movement has cured both patients. The 7 dispensary cases having no previous therapy made the most rapid clinical and microscopic recovery. The earliest occurred in seven weeks, the longest in four months.

Besides the factor of cleanliness following defaecation which plays so important a part in the treatment of trichomonas infection, there is another problem

in this connexion which should be stressed. It has been said that the menstrual period, during which time medication is rarely if ever used directly in the vagina, nullifies any therapeutic measures used during the preceding two weeks. If this is true, it may account for the unusual delay encountered in the cure of some of these patients. It has been suggested that in certain selected cases an attempt be made to treat them daily through the menstrual period at least with gentle douches.

ENDOCERVICITIS

In this group there were 14 cases from dispensary practice equally divided as to specific and non-specific infections, and 15 cases from private practice. In the latter group 11 were gonococcal and 4 non-specific.

The most spectacular results were in the group of patients having gonococcal endocervicitis. There appears to be no difference according to whether these patients are dispensary visitants or able to pay for private medical care. Of the total of 18 cases of specific gonococcal endocervicitis treated, not one failed to show a definite improvement on her second visit, usually one week later. All vouchsafed the information that the discharge had lessened and that they "felt better." As in the group discussed in my preliminary report,¹² the discharge had changed from the "thick, greenish-yellow, foul-smelling leucorrhœa to a milk-white, odourless and comparatively thin secretion." All these patients had the benefit of the daily douche with basic phenylmercuric nitrate and showed the results of it in the rapidity with which they became symptom-free. As previously reported, adjuvant treatment in the form of the actual cautery, silver nitrate, and the like for associated erosions, nabothian follicle cysts, &c., could be initiated at an earlier period in the course of treatment than heretofore.

In the group of 11 cases of non-specific endocervicitis (7 in dispensary and 4 in private practice) all showed a rapid amelioration of their symptoms. As a cleansing germicidal douche, basic phenylmercuric nitrate proved its efficacy in this as well as in the other types of infection in the lower female genital tract. As soon as the subjective symptoms had improved and there was a decided change in colour and lessening in the leucorrhœa, adjuvant treatment was successfully employed in each case.

OTHER CONDITIONS

In one case of a *paracervical sinus* following cauterisation, basic phenylmercuric nitrate was used with beneficial results:—

This 38-year-old patient came to the dispensary on May 20th, 1933. A blind paracervical sinus was found parallel to and to the right of the cervical canal, admitting a probe for a distance of 2 cm. She had been treated with various other antiseptics and finally with increasing concentrations of silver nitrate in order to obliterate the sinus, with no results. On Oct. 25th basic phenylmercuric nitrate 1:1500 was instilled into the cervix and the sinus. The patient was instructed to use basic phenylmercuric nitrate daily as a douche. On Nov. 8th the discharge had changed in colour from a greenish-yellow to a milk-white, and in consistency from a tenacious mucoid to a watery type. The patient, who had been much annoyed for several months by the persistent discharge, volunteered the information that for the "first time in ages" she felt better and had no discharge. Examination one week later on the 15th showed a reduction in the depth of the sinus of about one-half. On Dec. 1st, 1933, the patient

was discharged from the dispensary with the sinus completely occluded and the secondary infection associated with her endocervicitis completely eliminated.

Since publication in my preliminary report¹² of the original case of *rectovaginal fistula* which closed spontaneously under the influence of basic phenylmercuric nitrate, a second case of post-operative rectovaginal fistula has been treated in the same way in the out-patient department at Mount Sinai Hospital:—

The patient, aged 33, was referred to the gynaecological dispensary on Oct. 24th, 1934, with the diagnosis of a post-operative rectovaginal fistula following perineorrhaphy. She complained of the passage of small quantities of feces via the vagina, and of a foul vaginal discharge. Examination revealed a foul greenish-yellow discharge coming from the vagina and a fecal discharge from a fistulous opening one-quarter inch in diameter, half an inch behind the introitus. The entire vagina and cervix were thoroughly cleaned with cotton pellets moistened with water. Basic phenylmercuric nitrate 1:1500 was instilled into the cervix and about 5 c.cm. was allowed to remain in the vagina. The patient was advised to use the 1:25,000 basic phenylmercuric nitrate douche twice daily. At the end of the first week the whole vagina looked clean. The fistulous opening into the rectum was clearly visible. The treatment was continued for another week; at the end of this time the edges of the fistulous tract were touched up with 20 per cent. silver nitrate. The douches were continued once instead of twice daily. On Dec. 5th, 1934, the fistula was closed and the patient was instructed to continue the daily douches for several more weeks. On Jan. 2nd, 1935, she was discharged from the gynaecological service completely cured with closure of the fistula and the absence of leucorrhœa.

Post-operative slough.—A woman, aged 46, was admitted to the out-patient department on Feb. 8th, 1935, after a vaginal hysterectomy, right salpingo-oophorectomy and a perineorrhaphy. She complained of a foul, thick, fecal-like discharge which showed no signs of clearing up.

Inspection revealed a large slough high in the vault along the suture line. It appeared at first as if a rectovaginal fistula had occurred. However, upon the removal of the debris and the thick, mucoid, foul-smelling, brownish-yellow discharge, no opening into the rectum could be found. The vagina was cleansed and swabbed with solution of basic phenylmercuric nitrate and the patient was instructed to take the antiseptic douches twice daily. At the end of the first week the improvement was marked. The intervals between douches were gradually lengthened, and at the end of four weeks the patient was discharged as well with absence of any leucorrhœa or slough.

Tinea cruris.—In private practice I had one patient who had had a tinea cruris of long standing. Pelvic examination was negative. There was no leucorrhœa. The tinea involved both thighs in the region of the perineal crural fold and on one side extended to the labium majus. Twice daily applications of basic phenylmercuric nitrate ointment 1:1500 according to the method advocated by Levine¹⁵ cured the tinea in three weeks with no recurrence after six months.

SUMMARY AND CONCLUSIONS

1. Laboratory investigations on the utility of phenylmercuric salts, in particular basic phenylmercuric nitrate, indicate that these compounds combine with the highest bactericidal and fungicidal potency yet discovered for any class of compounds, a relatively low toxicity for animals and for man. The chemical and physical properties of these salts, most of them being colourless, odourless, tasteless, relatively non-irritant, non-corrosive to surgical

instruments, and quite stable, greatly enhance their usefulness.

2. Clinical studies with basic phenylmercuric nitrate, which include up to the present many hundreds of cases in which the compound has been used with excellent results, indicate that this preparation is of great utility in the treatment of a wide variety of infections due to bacteria and fungi. Infections with the protozoon *T. vaginalis* also yield to therapy with basic phenylmercuric nitrate.

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THE TREATMENT OF CARCINOMA OF THE LOWER END OF THE ŒSOPHAGUS *

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CARCINOMA of the œsophagus constitutes between 2½ and 5 per cent. of all cases of malignant disease. There are three definite pathological types:

(1) The bulky, polypoid type of growth which extends into the lumen of the œsophagus causing obstructive symptoms at an early stage.

(2) The shallow ulcerating type causing early symptoms of mediastinal involvement such as pain and backache. Metastases and obstructive symptoms may be absent.

(3) The hard infiltrating scirrhus type which invades the œsophageal wall, encircles the lumen, causes fixation of the walls, and produces obstruction.

The disease is commonest in the lower third of the œsophagus (50 per cent.), and in four cases out of five it is a squamous epithelioma. It is stated that it remains local for quite a long period and that metastases are relatively late, but this is open to question. Abel,¹ in post-mortem examinations of patients dead of œsophageal carcinoma, found 46 to 72 per cent. free from metastases; lymph-nodes, however, were involved in about half the cases. Death is due most commonly to perforation of the œsophagus with the development of pneumonia, mediastinitis, or hæmorrhage, but sometimes there is extension by the blood stream with widespread metastases.

From time to time surgeons have attempted to solve the baffling problem of malignant disease of the gullet but with very little success. The record of

* Based on a communication to the Royal Medico-Chirurgical Society, Glasgow, on April 5th, 1935.

achievement in the field of radical surgery can be summed up in the three cases operated upon by Torek,² Eggers,³ and more recently Grey Turner.⁴ In point of fact the technical difficulties are so great, the disease so well established when first diagnosed, and the condition of the patient so poor, that only in a very exceptional case could success be hoped for, and then only in the hands of a surgeon with the special experience necessary to carry through the highly complicated and difficult operations involved. For this reason surgeons have mostly been content with palliative measures.

Formerly patients showing complete obstruction were submitted to gastrostomy. This operation staved off starvation, and by allowing rest to the œsophagus, relieved the associated inflammatory congestion so that some temporary improvement in swallowing might be expected. Not infrequently, however, the operation seemed to improve the patient's condition but little. Its performance, no doubt, confirmed his worst fears as to the nature of the disease, and with the loss of the mental tonic of being able to swallow food, an attitude of depression and despair was engendered which made the downward trend still more rapid.

It was not unnatural, therefore, that with increasing experience of the œsophagoscope in the diagnosis and treatment of conditions of the gullet, surgeons turned hopefully to a method which appeared to obviate the necessity for a gastrostomy.

TREATMENT BY RADIATION

In view of the success attending the radium treatment of epidermoid carcinoma elsewhere in the body, it was thought that good results should be obtainable in carcinoma of the œsophagus provided the difficulties of approach could be overcome and the technique of exposure accurately worked out. This method was proposed as early as 1904, and soon there were many accounts of apparatus, dosages, filters, and new methods for accurately placing the radium in the œsophagus. There were, however, no reports of cures or even successful palliation and the method fell somewhat into disfavour. Within recent years the most hopeful results have been reported by Guisez,⁵ who has had a very extensive experience of œsophageal work. He used 100 to 120 mg. of radium bromide screened by 1.5 mm. of platinum, inserted every two days for 10 to 12 hours. About six treatments in all were given. Of 270 patients treated in this way, 30 lived for more than 18 months, and of these, one survived 11 years, one 10 years, and one 5 years. On the other hand, Watson,⁶ of the Memorial Hospital, New York, states that none of his cases treated by intra-œsophageal radiation has lived long enough to encourage him to continue with this method.

Direct implantation of radon seeds into the tumour through the œsophagoscope has been given a trial, but it is obvious that with narrowing of the lumen by the growth, uniform distribution of the seeds is difficult to attain. In some cases a Souttar's tube has been used, the tube acting as a carrier for the radon applicator, while in other cases a vulcanite tube of the Symonds's type, with grooves on the wall for carrying radium needles, has been employed.

Surgical exposure of the œsophagus from the outside with implantation of radium round the growth has been tried, but it is too soon to indicate what success is attending this form of treatment. Lastly, high voltage X rays, administered through several portals, has given encouraging results in the hands

of Levitt,⁶ who reported six cases at a meeting of the Royal Society of Medicine last year. It is, however, in carcinoma of the upper end of the œsophagus that X rays are most effective.

On the whole, the results from treatment by radiation have been disappointing. Many different methods have been employed with no permanent cures, and it is still undecided whether the barrier to effective treatment lies in the character of the growth, or whether the difficulties of approach have delayed the finding of the best radiation technique.

EARLIER EXPERIENCES WITH RADIUM THERAPY

Some seven or eight years ago, in an endeavour to improve the outlook in cases of complete malignant obstruction of the lower end of the œsophagus, I adopted the method of opening the stomach, dilating the lower end of the œsophagus with the finger, and introducing a catheter containing radium in contact with the growth, the other end being brought out through the gastrostomy opening. These were cases in which the stricture was impermeable to manipulation from above through the œsophagoscope. The radium (30 mg.) was left in position for 5-7 days. When treatment was over, a tube was left in the stomach for feeding purposes for three weeks, after which the gastrostomy wound was allowed to close. Twelve patients were treated in this way and the results were encouraging. Relief was provided for periods of 6-18 months, and the majority of the patients were able to swallow till near the end.

This method of treatment had very definite disadvantages. In the first place a general anaesthetic was required, and the opening of the stomach widely enough to allow manipulation of the lower end of the œsophagus was attended with a fair degree of shock which in starved and enfeebled patients could not be ignored. Furthermore, it was conceivable that the forcible dilatation with the finger might cause some splitting of the wall of the œsophagus and allow spread of infection. Three patients died within a week of operation from pneumonia or mediastinitis, and even allowing that these patients were very bad risks, I considered the operative procedure too severe for the average case.

Another drawback was the inability to fraction the dosage of radium, with the result that the patient received the whole of the radium reaction when his physical resources were at their lowest ebb.

The main conclusion arising from a study of these earlier cases and the failure to achieve lasting results from radium therapy was that the average squamous epithelioma of the œsophagus is not a very radio-sensitive tumour, and that it seems almost impossible to deliver a lethal dose to the growth without damaging unduly the normal cells in the vicinity. The work of Coutard⁷ at the Radium Institute in Paris suggests that in dealing with growths of relatively low sensitivity the best results are obtained with repeated small doses of radiation extending perhaps over a period of several weeks. With this fractional technique applied to X ray dosage, Coutard was able to obtain improved results in the treatment of such conditions as malignant glands in the neck and carcinoma of the larynx, which had previously responded poorly to radiation therapy. This method stresses the importance of the integrity of the supporting vasculo-connective tissue.

It seemed, therefore, in the light of present knowledge and experience, that the technique for radium

administration in the case of carcinoma of the oesophagus should embody the following features:—

- (1) It should be easy of performance and carry little or no operative risk.
- (2) It should permit of small doses of radiation being given either daily or every second day with the minimum of discomfort and upset to the patient.
- (3) It should permit of gradual dilatation of the stricture.
- (4) The distance factor should be increased so as to obtain better screening and more uniform radiation to the growth.

THE MANAGEMENT OF A CASE

The preliminary diagnosis is made by fluoroscopic examination, and it is important to define accurately the upper and lower limits of the growth by examination in both the horizontal and vertical positions. This also guards one against treating the oesophageal extension of a carcinoma of the cardiac end of the stomach.

If the patient's condition is fairly good, he is submitted to oesophagoscopy examination, at which time the diagnosis is verified and a portion of the tumour removed for microscopic study. One is tempted at times to forego this step in view of the frail condition of the patient and the slight risk entailed, but it is of paramount importance to determine that the growth is really a squamous epithelioma and not the slower growing adenocarcinoma or even a syphilitic lesion.

Patients unable to swallow anything are prepared with rectal salines and glucose and then have a gastrostomy performed under local anaesthesia. At the end of a week, the rest to the gullet alleviates the superadded spasm and the patient is usually able then to swallow fluids. At this stage he is given fine silk to swallow after the method of Dunham,⁸ who first introduced this procedure in 1903. The swallowing is done slowly, not more than a yard in 24 hours. At the end of 48–72 hours, the gastrostomy tube is removed, and with a small blunt right-angled hook the thread is pulled up from the stomach on to the surface. There is never any difficulty in finding the thread provided it has reached the stomach. A few patients find the silk slightly irritating to swallow and in such cases ordinary fine sewing thread can be substituted, the stronger silk being attached to the oral end of the linen once the other end has been retrieved from the stomach.

Very gradual dilatation of the stricture is then carried out by attaching rubber catheters to the silk and pulling them up through the stricture towards the mouth. A larger calibre catheter is used each day until a size 14 to 16 English passes easily. For the radium treatment either a catheter of this calibre is used to begin with, or a special thick-walled rubber tube with a small metal olivary tip which is perforated to allow the passage of the thread. Thirty milligrammes of radium are used, in the form of 5 mg. needles arranged in tandem, the active length being 4 inches. This allows the radium to project 1 inch above and below the apparent limits of the growth in an average case. The position of the tube is checked by radiography, and daily treatments of 4–6 hours are given. The total treatment extends over 100–130 hours, depending upon distance.

When the radium is not in position the patient is fed by catheter through the gastrostomy opening, and is also allowed fluids by mouth. When the treatment is over, the gastrostomy wound is allowed to close. Patients are subsequently examined after

an interval by radiography and oesophagoscope, and if considerable cicatricial narrowing is taking place, dilatation is carried out with metal-tipped bougies guided over a previously swallowed silk thread. Occasionally a second radium treatment is given at the end of three or four months.

RESULTS AND CONCLUSIONS

The series treated in this manner was small, only 11 cases, and did not include some of the most unfavourable cases which were treated by X rays alone. There were no deaths during operation or while the patients were under treatment. The longest survival was 3½ years; three patients survived from 1½ to 2 years, one for 16 months, and six died within a year.

The patients with the bulky polypoid obstructing growths do best, partly because they are diagnosed a little earlier and partly because they appear to react a little better to radium. The ulcerating non-obstructing growths are not improved by treatment. Very old patients and those extremely debilitated react poorly. In a few cases I have tried to improve the results by giving a course of X ray treatment after intra-oesophageal radium, but without much apparent success. One difficulty encountered was that after an adequate radium treatment the patients could not stand a full course of X rays. At the same time I think a combination of radium and X ray treatment offers the best hope of success. It is impossible with X rays alone to build up an adequate depth dosage to the lower end of the oesophagus, but X rays should prove a useful adjunct in the treatment of outlying extensions of the growth which are insufficiently irradiated by the intraluminal radium.

I am satisfied that the main barrier to effective treatment of carcinoma of the oesophagus lies in the relatively late diagnosis of the disease, and the only moderate radiosensitivity of the average growth. It is unusual to meet with a highly radiosensitive growth which has been diagnosed early, and these hopeful cases constitute under 5 per cent. of the total admitted. In such cases a survival period of at least three years should be obtainable by appropriate treatment. With the remainder, a survival of 12–18 months is the best that can be hoped for at the present time. Nevertheless treatment is well worth while, for the patients are maintained in fair comfort until near the end. In conclusion, I think the results from radium treatment have been slightly improved by fractionating the dosage; but the problem of carcinoma of the oesophagus is still unsolved, and its solution lies beyond any mere modification of technique.

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EYE HOSPITAL, BRISTOL.—The Duchess of Beaufort on Oct. 21st opened the new Eye Hospital in Lower Maudlin-street, Bristol, which has been erected at a cost of £55,000. The old premises next door are being altered to provide accommodation for the nursing and resident staff. The sum of £23,000 is still required.

HÆMOCHROMATOSIS AND HEREDITY

BY R. D. LAWRENCE, M.D. Aberd., F.R.C.P. Lond.

ASSISTANT PHYSICIAN TO KING'S COLLEGE HOSPITAL, LONDON

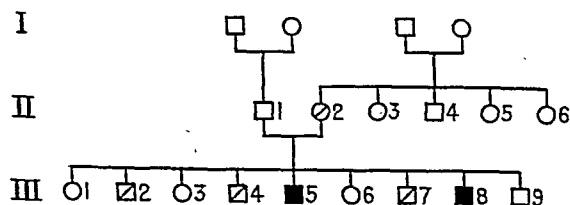
BRONZED diabetes (hæmochromatosis) is a very rare disease, most probably due to an inborn error of metabolism, mainly of iron. Sheldon's¹ recent publications provide the most complete survey of the disease, and he points out how a familial or hereditary incidence is to be expected in a presumably congenital type of disease. Only 5 certain familial cases in brothers are admitted by him and only 3 hereditary cases, not entirely proven, in succeeding generations. I therefore think it important to present evidence of definite familial and perhaps hereditary incidence in one family under my observation. Admittedly the clinical evidence is incomplete and the history doubtful in some members, but from the death of many of the family and some of their doctors, the evidence is as complete as it is ever likely to be.

The majority of cases of hæmochromatosis are diagnosed from the appearance of diabetic symptoms, and in this way I first came in touch with this family. I recognised the affected member as a case of hæmochromatosis, and the family history showed that several other relations were known to have passed sugar. Altogether the history of 116 individuals in 6 generations was obtained as regards glycosuria. But with all the necessary inaccuracies involved in such an extensive pedigree we need not be concerned, and the appended pedigree is confined to the three relevant generations. It is worth describing the numbered members in what detail is possible. It should be remembered that the four classical signs of hæmochromatosis—pigmentation, cirrhosis of the liver, diabetes, and sexual hypoplasia—may not be found in every case, and that two and even one such symptom of the complete syndrome in such a family may have significance. Much of the evidence has been obtained by correspondence, and I am as critical of its value as any reader.

THE FAMILY PEDIGREE

The accompanying pedigree is arranged according to age. There are no intermarriages in the family.

M F
 ■ = HÆMOCHROMATOSIS
 ☐ ☉ = SIGNS OF HÆMOCHROMATOSIS
 □ ○ = UNAFFECTED



The first generation is not known to have had diabetes, glycosuria, or pigmentation. In the second generation only II 2 was known to have diabetes for a number of years, and died aged 70. She was slightly jaundiced and had a large liver (three fingers-breadth). Severe anaemia was present and the differential diagnosis made shortly before death in 1916 was "pernicious anaemia or malignant disease." No note was made of any special pigmentation

except slight jaundice and a lemon-yellow tint, nor of the consistency of the liver.

The third generation merits fuller description. Unfortunately many details are missing and cannot be ascertained owing to the death of some of their doctors and the absence or destruction of notes. One of the recorded members—a doctor—has given much useful detail.

No. 1, the eldest, a female, aged 70, has pernicious anaemia. Glycosuria is absent, and she is not known to have a large liver or pigmentation.

No. 2, male, died aged 64, from what was tentatively diagnosed as "neoplasm of the liver, secondary to ? stomach." A large mass including the liver and ? spleen was present in upper abdomen; this was especially hard, irregular, and tender at the right flank. Ascites and jaundice were present at the end, but there is no mention in the short notes available of glycosuria or pigmentation. Wassermann reaction negative. His brother doubted the diagnosis of carcinoma because cachexia was absent and because the abdominal swelling had been present too long to be a carcinoma. "For several years he made his tailor alter the cut of his clothes to conceal the prominence of the upper abdomen."

No. 3, female, in good health.

No. 4, male, aged 62, in good health, has slight glycosuria, no enlarged liver, some brownish patches of pigmentation on face only.

No. 5, male, died aged 58, of some intercurrent obscure febrile illness. He was a typical case of hæmochromatosis with a very large liver and insulin had been required for 2½ years to control the diabetes.

No. 6, female, good health, no abnormality.

No. 7, male, good health, no signs of hæmochromatosis, but a slight trace of sugar has been found in his urine.

No. 8, male, a typical case of hæmochromatosis. Known to have large liver and diabetes since age of 48. Now aged 55, and keeps well and leads an active life with 40-50 units of insulin a day.

No. 9, male, lives in America and said to have good health.

Of the next generation none of the 13 sibs are known to pass sugar. They are mostly under thirty years of age.

Summary of above pedigree and discussion.—Of the 6 males, only 2 present the complete syndrome; 1 other died with a very large liver, 1 has glycosuria and slight pigmentation, 1 has slight glycosuria only. The sixth has no known abnormality. Of the females, only the mother showed any symptoms of hæmochromatosis—i.e., diabetes and hepatomegaly. The three sisters have not a single suggestive symptom.

If we accept only the 2 proven cases the pedigree is interesting enough to merit publication. But if we accept other members of the family who show one or a few symptoms as having hæmochromatosis, this pedigree becomes extremely interesting and suggestive.

HEREDITY AND THE NATURE OF HÆMOCHROMATOSIS

The most widely accepted view of hæmochromatosis is that it is a congenital disease, an inborn error of iron metabolism, a deposition of iron pigments in various tissues which has been going on from birth but only accumulates sufficiently to cause disease in middle age. If so, one would expect to find cases with a hereditary influence, and Sheldon has collected such evidence in 5 cases.

A striking feature of the disease is an overwhelming preponderance in males, a few females only being affected. This has never been explained, but in view of my recorded pedigree it is tempting to suggest that the disease is *hereditarily sex-linked* and is comparable with hæmophilia in this respect. One of Sheldon's¹ patients had a brother who died of

diabetes and whose mother and aunt had a long history of enlarged liver. Frisch's² case is still more suggestive of a sex-linked heredity. He describes a family, known locally as the "black family," in whom 7 sibs and their mother were strikingly pigmented. One brother died of hæmochromatosis; two others were pigmented and had large livers, but no glycosuria. Unfortunately the others could not be examined and even their sex is not mentioned.

The above evidence suggests that hæmochromatosis may be a sex-linked hereditary disease, like hæmophilia, transmitted by females and affecting mostly males. This hypothesis has the merit of fitting in both with the apparently congenital nature of this inborn error of metabolism and the overwhelmingly male preponderance.

It would be possible to produce arguments, genetical and otherwise, both for and against this hypothesis. This is not worth while until more evidence is accumulated from the study of pedigrees in hæmochromatosis to refute or confirm this suggestion.

SUMMARY

(1) A family of nine is described in which two brothers had proven hæmochromatosis. (2) Three other brothers and the mother, but none of the sisters, had some signs of the disease. This suggests that hæmochromatosis may be a sex-linked hereditary disease, transmitted by females and affecting mostly males.

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Clinical and Laboratory Notes

DEATH AFTER INJECTION OF ATEBRIN MUSSONATE

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D.T.M. & H.

PHYSICIAN, GENERAL HOSPITAL, COLOMBO; AND

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D.T.M. & H.

PATHOLOGIST TO THE HOSPITAL

ATEBRIN MUSSONATE has proved its value in the treatment of malaria; but like most other powerful drugs it must be used judiciously if toxic effects are to be avoided. Experience in the Ceylon epidemic of 1934-35 has shown that atebirin should not be given in cases of advanced hookworm disease or where there is disturbance of renal function; but unfortunately, even in cases where no contra-indications have been apparent, untoward results have occasionally followed its use.

A. B., aged 20, was admitted to hospital on July 14th, 1935, after three days' fever, with rigors, and two days' vomiting. During an attack of malaria two months previously he had two intramuscular injections of atebirin mussonate at Kurnegalle Hospital, after which he was free from fever till the beginning of the present attack.

On admission he seemed to be deeply jaundiced (skin, conjunctiva, sclerotics, &c.) and appeared very ill. His mind was clear and he talked coherently but with difficulty; he had a queer expression on his face, lying in bed with the minimum of movement and staring into space. The heart was within normal limits and there were no adventitious sounds; the pulse-rate was 130 and the

blood pressure 120/50. The temperature was 99°F. and the respiration-rate 20. Nothing abnormal was detected in the lungs. The liver was not palpable or enlarged; there was tenderness over its lower border but no rigidity. The spleen was palpable three fingers below the costal margin. No malarial parasites were found in the blood. A van den Bergh test showed: direct, immediate positive; indirect, positive. No albumin, sugar, bile, or atebirin was found in the urine.

In view of the yellow staining, associated with absence of bile in the urine, the case was diagnosed as one of atebirin poisoning. The absence of atebirin in the urine was attributed to failure of the kidneys to excrete it.

Progress and treatment.—The patient was put on quinine *grs.* 7 t.d.s., with *tinct. digitalis* m10 t.d.s. Glucose and sodium bicarbonate in normal saline were given freely by mouth; also an ounce of concentrated mag. sulph. solution. Next day he was gradually getting worse, the pulse being very rapid and weak. Digitalin injections were given in addition to other stimulants. On the following day (July 16th) he died.

Post-mortem findings (July 17th).—The subcutaneous tissues were bright yellow, of a colour quite unlike that seen in jaundice. The brain (2½ lb.) was yellowish and the ependymal lining of the ventricles, the choroid plexus, and the fluid contents of the ventricles were stained yellow. A "crush" preparation did not show either parasites or pigment in the capillaries, and histological sections revealed no microscopic changes. The surface of the tongue, the mucous lining of the pharynx, œsophagus, trachea, bronchi, and their secretions were all yellow-stained. Each pleural cavity contained about 3 oz. of brownish-yellow fluid which on chemical examination for atebirin gave a positive reaction. The lungs were yellow and œdematous, and the pericardium contained about an ounce of yellowish fluid which also gave a positive chemical reaction for atebirin. The epicardial fat had the characteristic yellow colour; the myocardium and the valves showed no naked-eye changes. No free fluid was found in the peritoneal cavity. The liver was moderately enlarged and was congested. Histologically there was accumulation of malarial pigment in the interstitial tissue and in Kupffer cells; there was also an increase of interstitial tissue. The spleen was enlarged and slaty in colour. A stained smear showed malarial pigment but no parasites; the pigment was irregularly distributed throughout the organ within reticulum cells. Secondary follicles of the malpighian bodies showed fatty degeneration, the splenic pulp contained a certain amount of blood and also some areas of hæmopoietic tissue. The kidneys were coloured yellow, but no other macroscopic change was seen. Microscopically there was proliferation of the cells lining Bowman's capsule, forming several layers of cells. The glomeruli showed no marked lobulation; there was fatty infiltration of the tubular epithelium. No malarial pigment was seen. The contents of the urinary bladder contained no atebirin or bile.

Test for atebirin.—The method adopted for the demonstration of atebirin was as follows. Ten cubic centimetres of the fluid, if not already alkaline, is alkalinised by adding potassium carbonate. Amyl alcohol (2 c.cm.) is then shaken up with the alkaline fluid, and the presence of atebirin is recognised by the green fluorescence of the alcoholic extract when held against a black background.

The high concentration of atebirin in the tissues and tissue fluids as found at autopsy is in striking contrast with the absence of even a trace of atebirin in the urine either before or after death. It is hard to explain why it was that this drug failed to pass the renal filter, especially as examination of the kidneys reveals no very advanced lesions.

It seems difficult to be certain beforehand whether a patient will react badly to atebirin, and also difficult to increase its excretion once a full therapeutic dose has been injected. These are serious disadvantages to the extensive use of atebirin by injection.

We acknowledge with thanks our indebtedness to Prof. E. K. Wolff, of the Ceylon Medical College, for his post-mortem notes and his report on the microscopical sections.

UNUSUAL SUBCUTANEOUS RHEUMATIC NODULES

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It is many years since the subcutaneous rheumatic nodule was first described, and its nature and significance are widely appreciated. The typical rheumatic nodule varies in size from "a pin's head to an almond"; it is seen over bony prominences and tendons; it is not attached to the skin, and may or may not be fixed to the underlying bone—this probably depending on whether it is situated in a tendon sheath or aponeurosis, or whether it is subperiosteal.

Once thought to be a fibrous structure, the nodule is now known to be a focus of low-grade inflammatory change. Histologically, it shows a structureless background, generally believed to be composed of fibrin; this is invaded by granulation tissue, and is widely infiltrated with cells, chiefly macrophages, plasma cells, and lymphocytes. The structure is thus similar to that of the Aschoff nodes seen in the myocardium. Findlay¹ considers that there is also oedema of the tissues composing the nodule; this would account for the ease with which it can be palpated below the skin as contrasted with the difficulty experienced in dissecting it out at post-mortem or biopsy. The presence of nodules usually indicates active carditis and seriously affects the prognosis. This, of course, is readily understood when the nature of the nodules is considered; they are manifestations in the subcutaneous tissue of the same inflammatory process as is occurring in the heart. The following case is recorded because of the unusual nature of some of the nodules present.

A boy, aged 8 years, was admitted to the Hospital for Sick Children, Great Ormond-street, under the care of Dr. W. J. Pearson on Dec. 15th, 1934. In the previous June he had had tonsillitis and swelling of his hands and ankles. In July he had had scarlet fever. Since then there had been some swelling of his ankles, elbows, and knees, with pain on movement; he had tired easily and become breathless on exertion; twitching of his arms and legs had been noticed,



FIG. 1.—Occipital nodules.

and small nodules seen on his hands and feet. There was no previous history of rheumatic fever. On admission he was seen to be a fairly nourished but rather pale child. Typical rheumatic nodules of the type described were present over the occiput, right acromion, elbows, knees, and the extensor tendons of both hands and feet. Some of the occipital nodules were large (Fig. 1); some were freely movable, others attached

to the skull. The temperature was 101° F. and the pulse-rate 135. His heart showed evidence of an old-standing mitral lesion; the apex-beat was half an inch outside the nipple line, and a loud blowing systolic and short diastolic murmur could be heard in the mitral area.

The temperature fell to normal in a week, and in a fortnight the pulse-rate had fallen to a range of from



FIG. 2.—Two nodules over the posterior-superior iliac spines and one in the midline. The patient is seated with his back to the camera.

90 to 110. The boy's general condition improved, but the nodules increased slightly in size. The improvement continued for a month, but on Jan. 14th, 1935, slight choreiform movements of the left arm were noticed, lasting for a few days. The temperature rose to 100° F. for two days, and the pulse range to from 100 to 140 for a week, after which it settled to from 90 to 100. On Jan. 24th three large nodules of unusual type were noticed, appearing suddenly and reaching their full size in a few days; they were symmetrically placed over the lower part of the back, one over each posterior superior iliac spine and one in the midline over the lower part of the sacrum (Fig. 2). They were about one inch in diameter and were firmly fixed to the underlying bone, though the skin over them was freely movable. These nodules remained unchanged for about three weeks and then gradually receded, while the other rheumatic nodules became smaller and less numerous.

A series of estimations of the erythrocyte sedimentation-rate was made by Dr. W. W. Payne. On admission it was raised to 44 mm. per hour (Payne's micro method); it fell to 19 on Jan. 9th, but had again risen to 36 on the 14th, at which time the temperature and pulse-rate also were raised and the choreiform movements noticed. It then slowly fell, being 9 on Feb. 4th, after which it rose slowly to reach 21 at the beginning of March.

The special feature of this case is the presence of the three large nodules over the sacrum. Nodules of this type must be exceedingly rare, but it is interesting to note that, in an illustration to a paper by Cheadle in 1889,² three large nodules are depicted in exactly the same situation as those described above. Unfortunately no special reference is made to them in the text. Cheadle states, however, that large nodules are sometimes seen, but that they appear gradually and have an existence of months. The rapidity of formation of the nodules in the present case was striking. It can most readily be understood if one accepts Findlay's view on the presence of oedema. Like all rheumatic nodules, these swellings were painless; this is rather surprising in view of their rapid formation, especially considering their subperiosteal situation, which their fixity to the underlying bone would argue. It is interesting to correlate the time-relationships of the nodules to the other evidences of activity. Their appearance

was preceded by a phase of activity as evidenced by a rise of temperature, pulse-rate, and sedimentation-rate. When the nodules were first seen, however, this activity was already settling down; the temperature was normal, the pulse-rate had settled, and the sedimentation-rate had fallen almost to normal.

I am indebted to Dr. Pearson for permission to publish the case, to Dr. Payne for the estimations of the sedimentation-rate, and to Mr. Martin who took the photographs.

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A CASE OF FATAL MENSTRUATION

By E. M. R. FRAZER, M.D. Edin.

ON Jan. 6th, 1935, I was summoned about midday to see a domestic servant who had collapsed when at work for no apparent reason.

Aged 25, she had never had medical attention and was said to have had no illnesses beyond a vague reference to anæmia. Menstruation had begun at 16–17 years of age, and the periods had been regular but scanty. In the summer of 1934 she had no periods for three months, but they subsequently recurred and were regular at monthly intervals till December, 1934. The last had commenced on Dec. 27th, and she had gone about her work as usual, without pain or even discomfort. On the evening of Jan. 5th she felt very tired, but got up and went on with her usual work on the 6th. Just before midday she fainted and her employer sent her to bed.

When I saw her it was at once obvious that she had lost a great deal of blood; she was very white and restless. The temperature was normal, the pulse 110 and thready; there was no pain. The hymen was intact, and after removal of a small vaginal clot the os admitted the tip of one finger, with difficulty. The uterus was small, and there were no signs of pregnancy. Treatment for the moment consisted in packing the vagina, raising the bed foot, injecting pituitrin, and taking general measures against shock. Her hæmoglobin was 40 per cent., but to my later regret I did not do a blood count.

At 8 P.M. the general condition was much as at midday, but there had been further loss of blood about 7 P.M., and she was taken into hospital. Without anaesthesia the cervix was dilated; the uterine mucosa was normal in appearance. The cavity was packed and intravenous saline administered. At 10 A.M. next day she became very restless, and after sudden unconsciousness the jugular veins were much distended. She died about 11 A.M. with signs of cerebral thrombosis.

Post-mortem examination showed a uterus without any pathological changes, and thrombosis of the lateral sinus.

I have not been able to find any similar case on record in this country, but in 1925 van Vugt¹ described one in which a girl of nearly 16 died a week after the beginning of her second period.

After slight injuries, her skin was often covered with blue spots; she suffered from nose-bleeding, and she had been treated for congenital syphilis. There was a deficiency of blood-platelets and coagulation was delayed. The uterus was normal and the liver and spleen not palpable; autopsy was refused. Van Vugt rejects the diagnosis of hæmophilia because, even if its existence in women is admitted, there are too many contrary findings—e.g., the deficiency of platelets. Moreover the stepmother distinctly stated that clots were present. He suggests thrombopenic purpura as a likely cause, although the patient's syphilis should not be forgotten.

In my own case the patient had menstruated for about nine years regularly. She had had no previous illnesses and had always been able to work. The uterus was obviously virgin, and although she had missed three periods last year she had not been incapacitated from work by the fourth—i.e., there had been no abortion. She had had no occasion to seek advice about her "anæmia," which was apparently manifest only in scanty periods and occasional lassitude and breathlessness. Although the percentage of hæmoglobin was low, and no cell count was taken, it is difficult to believe that she could have had any severe anæmia and yet be able to perform her normal work.

Burton-on-Trent.

¹ Vugt, D. van: *Nederl. tijdschr. v. geneesk.*, 1925, ii., 352.

MEDICAL SOCIETIES

ROYAL ACADEMY OF MEDICINE IN IRELAND

SECTION OF OBSTETRICS

A MEETING of this section was held in the Royal College of Physicians on Oct. 18th, Dr. J. S. QUIN presiding.

Carcinoma of the Uterus

Dr. BETHEL SOLOMONS showed three specimens of carcinoma of the uterus, all operated on between August and September, 1935.

CASE 1.—Miss A., aged 52, unmarried, never had trouble with her menstrual periods until four years previous to admission when irregularity might be reasonably expected. For the past year the hæmorrhage had become more severe. She had no other gynaecological trouble. Examination revealed a slightly enlarged uterus, and a diagnosis of carcinoma was made and hysterectomy was done. Dr. Bourke reported on the specimen that the uterine cavity was distended by a cauliflower-like mass; microscopically the growth showed adenomatous polypi which in places suggested a malignant change. The condition was a carcinoma of the body of the uterus of an adenomatous type.

CASE 2.—Mrs. B., aged 57; married 17 years; nullipara. She had had two large ovarian tumours, believed to be

malignant, removed in the country in October, 1932 and 1933. Her only complaint was of a discharge. On examination the uterus was found to be lying back and apparently fixed; the curettings were macroscopically and microscopically malignant. Total hysterectomy revealed a uterus which when freed from adherent small intestine was the size of an eight weeks' pregnancy. The patient did well for eight days and then jumped out of bed when unobserved for a few moments. That evening the wound burst open and about 4 inches of small intestine extruded. The abdomen was closed and drained and she did very well after a stormy convalescence. The report on the specimen was that of a typical adenocarcinoma of the body of the uterus, infiltrating the muscle wall, and proliferating into the cavity of the uterus, and extending down towards the cervix.

CASE 3.—Mrs. C., aged 59; married 32 years; six children. Complained of a yellow discharge (three months), later blood-stained, and pain in the side. There was no loss of weight. Bimanual examination showed a much enlarged boggy body of the uterus with a normal cervix. Total hysterectomy revealed an endocervical carcinoma, the pathological report suggesting that the solid carcinoma in the uterine cavity was probably an extension from the cervix.

Dr. Solomons raised the question whether a diagnostic curettage should be done in suspected carcinoma of the body of the uterus. In his view this

should be avoided unless the diagnosis was doubtful. He commented also on certain points in the technique of total hysterectomy for carcinoma of the body of the uterus. The vagina was plugged with gauze soaked in 3 per cent. picric acid, and if it was known that the uterus was septic or malignant the cervix was sewn up. During the operation no cutting or forked instrument of the volsellum type should be placed in the uterus. Usually clamps placed on the broad ligaments acted as effective tractors, but in Case 2 these would not hold owing to the previous removal of the adnexa. He had sometimes used Bonney's myomectomy clamp to avoid spill. In Case 3 if this endocervical condition had been apparent Wertheim's operation would have been done, but the body of the uterus was much enlarged and corporeal carcinoma seemed to be the correct diagnosis. The enlargement of the body proved to be due to a pyometra. Deep X ray would now be used in this case.

The PRESIDENT said that in Dublin they were very fortunate in having a very low percentage of malignancy in the uterus compared to other centres. He was inclined to agree that the prognosis in the first case described was excellent. As to the second case, two of his own patients had been given prophylactic deep X rays after a total hysterectomy, and had now survived one for three years and the other for four years. Dr. Wilfred Shaw had said that in cases of ovarian malignancy he very seldom found a spread of the disease to the uterus.

Dr. F. S. BOURKE said the first case had not at first looked malignant, but sections revealed a definite adenocarcinoma. The third case was probably a spread from the cervix.

Dr. D. J. CANNON objected on general principles to a curettage in malignant cases. In doubtful cases he had no hesitation in doing a hysterectomy and making a diagnosis afterwards. It was important in operations for so-called functional uterine bleedings to split the uterus and see that carcinoma was not present. If in doubt he did a complete hysterectomy and removed the ovaries from both sides before closing the abdomen. It was only lately that radium was supposed to be indicated in cancer of the body of the uterus.

Dr. G. C. DOCKERAY said that a section from the endometrium in the third case suggested to him a typical squamous carcinoma spreading upwards.

Dr. R. M. CORBET said that it was not possible always to make a diagnosis of carcinoma from a naked-eye specimen, and if a diagnostic curettage was not done, it would be necessary to do a total hysterectomy in every doubtful case.

Dr. BETHEL SOLOMONS, in reply, said that he believed that the small number of cases of carcinoma of the cervix in the Irish Free State was due to good midwifery and the practice of performing trachelorrhaphies and amputations of the cervix. He did not believe in the necessity for deep X ray therapy after hysterectomy for carcinoma of the uterine body, unless there was a suspicion that the whole trouble had not been eradicated. In malignant disease of the ovary there was no need to remove the uterus or the other ovary unless either was involved. He did not agree that diagnostic curettage could be dispensed with, but if the diagnosis of the corporeal carcinoma could be made with certainty, curettage should not be done, as it might cause implantation metastasis. He preferred hysterectomy to radium for cancer of the body unless the woman was suffering from grave constitutional disease.

Removal of Very Large Fibroids

Dr. CANNON showed a very large cervical fibroid which he had removed by abdominal section. The tumour was quite the size of a seven months' pregnancy, and it had a small fundus of the uterus on its upper pole. It was encapsulated, the capsule containing very many large veins. It was found possible to get inside the capsule and enucleate the tumour. Hysterectomy was then performed. Dr. Cannon also showed a large submucous fibroid, removed per vaginam by morcellation because it was sloughing and highly infected.

The PRESIDENT congratulated Dr. Cannon; specimens such as those were usually only seen as post-mortem specimens.

Dr. O'DONEL BROWN said that in a case of a sloughing submucous fibroid he thought there might be danger in removing the fibroid through the abdomen.

Dr. CANNON, in reply, said that the advantage of a small hospital like the one in Kildare to which he was attached was that there was no need to hurry patients away in order to make room for others. The patient from whom the second specimen was taken would certainly not have stood the operation unless she had had some preliminary treatment.

Dr. R. M. CORBET read a communication on

Surgery in the Pregnant

This was based on nine recent patients who had required operation during pregnancy and had all carried to term. The chances of abortion following operation were much less than was popularly believed. He stressed the necessity for early diagnosis and close co-operation between the surgeon and the obstetrician. The percentage of abortion following operation was little higher than the average incidence of abortion, except in operations on the uterus and adnexæ. The maternal mortality of operations undertaken in the early months of pregnancy was no worse than the mortality in the non-pregnant state, but the mortality in the last three months was increased by the difficulties of diagnosis, the technical difficulties of abdominal surgery, and the ease with which peritonitis spread. In his view the best results would be obtained by immediate operation in acute conditions irrespective of the period of pregnancy.

The PRESIDENT said that the view that it was fatal to operate on a pregnant woman died very hard. This and the view that a patient could not travel because she was ill were responsible for a great number of deaths. The danger of appendicitis in women who were approaching full term was peritonitis, and this was due to the fact that it was very hard to get anything like full drainage. He personally thought that a pregnant woman probably had more resistance than a non-pregnant one. Mr. Maunsell had operated in 1925 for cancer of the rectum during pregnancy. Some of the basal anaesthetics should be very satisfactory in these cases, since they had no effect on the foetus.

Dr. T. M. HEALY said that his own experience of surgery in pregnant women had been slight but fortunate. The only fatality he had seen had occurred in the puerperium due to appendicitis. Of six cases of appendicectomy in the early months of pregnancy none had aborted, nor had a case of perineorrhaphy done during pregnancy. He thought there was a great deal of nonsense talked about the danger of anaesthetics to the child.

Dr. R. W. SHAW did not think it mattered much

what anaesthetic was given to a patient provided she was in good condition; if she was not, gas-and-oxygen with some preliminary premedication, preferably morphia, was indicated. It was ridiculous to think that a pregnant woman with a bad tooth could not have it out for fear of an anaesthetic. Gynaecological, even more than surgical, cases required efficient preparation. The shorter the anaesthetic the better for mother and child in cases of Caesarean section. The anaesthetic should not be started until everything was absolutely ready for carrying out the operation, and should be discontinued at the earliest possible moment.

Dr. O'DONEL BROWN mentioned a case in which the corpus luteum had been removed in early pregnancy.

Dr. BETHEL SOLOMONS wished Dr. Corbet had dealt with more cases of late pregnancy. In the early months operation should be done; if appendicitis was diagnosed in the eighth or ninth months operation should be performed, but if there was

any reasonable doubt and it could be postponed with safety until after the birth this would be advisable. Caesarean section should be performed immediately the patient was anaesthetised; too much anaesthetic killed the baby, and he had seen foetal death following delay on the part of the obstetrician.

Dr. CORBET, in reply, said that the paper was not really on surgery in the pregnant but on the attitude of the obstetrician when faced with a surgical complication. He did not think that an anaesthetic had any ill-effect on the baby in utero, but bad effects might be produced in Caesarean section by removing a deeply anaesthetised baby from the uterus. The size of the uterus at term prevented proper drainage, opened up a large area for peritonitis, and by its movements prevented any effective walling off of infection. The real problem was making up one's mind to call in the surgeon. Where the diagnosis of acute appendicitis could not be excluded, he was satisfied that it was safer to submit the patient to operation whatever the period of pregnancy.

REVIEWS AND NOTICES OF BOOKS

Principles and Practice of Medicine

Twelfth edition. By the late Sir WILLIAM OSLER, Bart., M.D., F.R.S. Revision by the late THOMAS McCRAE, M.D., F.R.C.P., Professor of Medicine, Jefferson Medical College, Philadelphia. London and New York: D. Appleton-Century Company, Inc. 1935. Pp. 1196. 30s.

Osler in his life-time made his cherished text-book a classic, and the late Dr. McCrae, taking it over from him, tried always to preserve in it what was characteristic of Osler. In the main he has succeeded. Osler's medicine was essentially bedside medicine, built out of long and rich experience, based on morbid anatomy, and described succinctly with this great man's rare combination of enthusiasm and precision. Dr. McCrae's last preface begs us not to destroy the sweep and the unity of medicine by cultivating it too much in discrete specialties, and warns us against trusting in instruments and laboratory procedures to the neglect of bedside study. That is in the Osler tradition, which the text-book undoubtedly carries on, even though in the newer sections, of which this edition has a goodly number, the authentic Osler style must be lacking. The additions and alterations bring it fairly well abreast of current established opinion. There have been small changes in the general arrangement, but there is still no separate section for the virus diseases; psittacosis and vaccinia appear in the contents as infectious diseases of doubtful or unknown aetiology, although in the text their causation by filtrable viruses is explained. The chief lack in the book is the absence of references, either to the authorities so frequently quoted by name in support or illustration of statements, or to recent comprehensive monographs and papers to which the student may turn when he is specially interested in any disease. Given in small type these would not add too much to the size of the book, which has been kept almost unchanged, in spite of added material and thicker paper, by the use of a slightly smaller, yet bolder and more easily read type. But these are small matters; it is to be hoped that "Osler" will long continue as a favourite on the student's bookshelf, and that the student will not cease to appreciate the principles and practice of a medicine in which the patient is more important than the disease.

Traitement des fractures et luxations des membres

Second edition. By JACQUES LEVEUR, Professeur agrégé à la Faculté de Médecine de Paris, Chirurgien de l'Hôpital Bretonneau; and CHARLES GIRON and RAOUL-CHARLES MONOD, Chirurgiens des Hôpitaux de Paris. Paris: Masson et Cie. 1935. Pp. 442. Fr.50.

This text-book on fractures is the outcome of a practical course of instruction which was started by the authors in 1922 in Paris, while they were working under Prof. Pierre Delbet, who contributes a preface. He testifies to the great success of the course, which has since become a regular feature. The book is very well arranged, written, and illustrated. As might be expected, many of Delbet's special methods are incorporated, and in particular it is satisfactory to have a full account of the use of his method of plaster splinting of lower leg fractures. A modification of the method of fixation by the use of moulded plaster-of-Paris splints is described. Pieces of starched muslin are cut to the desired size and soaked in a plaster-of-Paris cream ("bouillie plâtrée"). Excess of plaster is scraped off with the edge of the hand, and the muslin impregnated with the paste is applied around the limb, and moulded on and held in position by bandages. A feature of the book unusual in recent text-books is the attention devoted to operative reduction and fixation of fractures. Though the modern tendency is to use open methods of treatment only as a last resort, it is convenient to find in regard to almost every fracture a description of the operative treatment. Much useful information is contained in the sections devoted to internal fixation, plating, and osteosynthesis. To the surgeon who has to perform these operations, the instruments described and illustrated will be of especial interest. The forceps described as Lambotte's are particularly ingenious. Throughout the work stress is laid on the principles to be kept in mind when each form of fixation is being used.

The non-operative methods of treatment recommended all seem sound and practical; the methods of fixation of the clavicle illustrated on pages 92 and 93 will repay study. In the reduction of dislocations of the shoulder-joint, the method of Kocher is still matised as a "brutal and dangerous procedure,

which ought to be explicitly forbidden." Prof. Delbet's method of reduction by continuous traction followed by slight rotation and pressure over the humeral head is described in detail. The section on first aid is rather too condensed. The volume as a whole is well produced.

Sedgwick's Principles of Sanitary Science and Public Health

Rewritten and enlarged by SAMUEL C. PRESCOTT, Sc.D., Dean of Science, and Head, Department of Biology and Public Health; and MURRAY P. HORWOOD, Ph.D., Associate Professor of Biology and Public Health. Both of the Massachusetts Institute of Technology. London: Macmillan and Co., Ltd. 1935. Pp. 654. 18s.

THIRTY-FOUR years have elapsed since W. T. Sedgwick, then head of the Massachusetts Institute of Technology, published his "Principles of Sanitary Science and Public Health." The book at once made its mark. It displayed an unusual grasp of the principles upon which effective preventive action must necessarily be based, a wealth of skillfully chosen illustrations, strong common sense, and a felicitous power of expression. In America it has long been an authoritative guide to students and health officers, and is recognised as a classic in the literature of public health. In Great Britain, though less well known, it has warm admirers, and no student or practitioner in the field of public health could fail to profit from its stimulating and suggestive teaching. After Sedgwick's death a new edition was long needed, and it has now appeared under the editorship of Dr. Prescott and Dr. Horwood, who worked with Sedgwick first as pupils and later as colleagues in the Massachusetts Institute. They had no enviable task; recent advances in public health theory and practice necessitated extensive revision, and the rewriting of a book so strongly stamped with personality as Sedgwick's "Principles" might well have daunted the most intrepid editor. The work has been done with discretion and, on the whole, with success. In bringing Sedgwick's subject matter up to date the editors wisely decided to make no attempt to emulate his style of writing; they have set out their additions in their own way, and it is a way of concise and lucid exposition, which should appeal to the general as well as to the professional reader.

What is of permanent value in Sedgwick's original chapters is retained. His account of the Broad-street pump cholera outbreak, for instance, the chief features of which should be familiar to all aspirants for the D.P.H., is reproduced, and is supplemented by details of more recent outbreaks of water-borne disease; for the editors have adopted Sedgwick's method of teaching by giving actual examples of how disease has been spread or prevented. The chief stress is laid on environmental hygiene, and those who imagine that Western civilisation is nearing complete success in this field of activity will be quickly undeceived by a study of this volume. Transport developments and rapid changes in social conditions and customs have, indeed, introduced new problems of sanitation. Mosquitoes and other living carriers of disease may now be rapidly conveyed through the air, and as the editors put it: "with the airplane and ocean liner knitting even the most distant and unfrequented areas of the earth closely together, the price of safety against yellow fever and other tropical diseases must be eternal vigilance." The spread of swimming pools, which in the United States increased from 540 in

1913 to over 5000 in 1929, and of holiday camps; the development of air conditioning, cold storage, and refrigeration; and the increase of noise in modern life are only a few of the factors which have added to the problems that a health officer must now be prepared to tackle. On these and other new problems this book affords sound guidance, and though many of its facts are drawn from American experience and have to some extent a special relation to American conditions, the principles they illustrate are of general application. Indeed, the information the book affords on public health work in the United States enhances its value to workers in this country; for in some departments—e.g., the protection of the food-supply and especially milk control—we have much to learn from what is being done on the other side of the Atlantic.

The book may be commended to all who desire up-to-date information on the conditions that threaten the health of modern communities and the means by which such conditions may be successfully attacked.

Preventive Medicine and Hygiene

Sixth edition. By MILTON J. ROSENAU, M.D., Professor of Preventive Medicine and Hygiene, Harvard Medical School. London: D. Appleton-Century Company. 1935. Pp. 1481. 42s.

Rosenau, which has now reached its sixth edition, has become a standard text-book in public health. It has never been allowed to show signs of obsolescence. In preparing the new edition the author, with many of his colleagues, has brought each part up to date, and careful reading shows that very little recent work of interest to public health workers has been missed. New subject matter has been introduced in relation to contraception, maternal mortality, heart disease, diabetes, ringworm, snake poisoning, psittacosis, periodic health examinations, and hospitals. Other parts have been extensively rewritten. As in most American books, the control of communicable disease and modern fields of public health work occupy the earlier pages, environmental hygiene following, but the latter subject receives very full consideration in several sections. An admirable feature is the list—sometimes long—of references at the end of each chapter, which include work done in other countries besides America. Medical officers of health and teachers of public health will find the new edition invaluable.

The Extra Pharmacopœia

Twentieth edition. Vol. II. Published by direction of the Council of the Pharmaceutical Society of Great Britain. London: Pharmaceutical Press and H. K. Lewis and Co., Ltd. 1935. Pp. 889. 22s. 6d.

For fifty years William Martindale, father and son, produced the "Extra Pharmacopœia," aided for a period by Dr. Westcott, and their self-sacrificing labour reduced to order and manageable compass references to outstanding original work and notable advances throughout the whole field of therapeutics. On the death of Mr. W. H. Martindale in April, 1933, the "Extra Pharmacopœia" as a personal production came to an end, and the Pharmaceutical Society decided to take over the responsibility for its continued issue. The revision was entrusted to the Codex Revision Committee, and Mr. C. E. Corfield, editor of the Codex, was appointed editor of Martindale. The "Extra Pharmacopœia" had long been divided

into two volumes, the first devoted mainly to treatment, the second to the analysis and assay of medicinal products. The twentieth edition of the first volume appeared in January, 1933, but the change in policy delayed the issue of the second volume which has only now appeared. The new editor has revised and largely rewritten the matter of this second volume, removing information no longer considered of value to medical practitioners, pharmacists, and analysts and replacing it by more useful accounts and researches into modern substances used in the treatment of disease. One cannot but regret the passing of a classic; in its new guise, however, the "Extra Pharmacopœia" will be found as indispensable as in its old.

Trattato di Anestesia

By A. M. DOGLIOTTI, Doc. di Patol. Chirug., Univers. de Torino. With preface by Prof. O. UFFREDUZZI. Torino: Unione Tipografico-epitrica torinese, 1935. Pp. 552.

This book reflects the greatly increased attention which is now given by continental writers to the theory and practice of general as opposed to local anæsthetics. About 200 pages of this work are given to general, as against about 300 to local measures, and considering the vast number of illustrations which accompany the latter this is giving an importance to general anæsthesia which is remarkable in a non-English volume of this kind. An introductory chapter contains a number of interesting portraits, including one of Henry Hill Hickman. The physiology of pain is lucidly discussed, and then the theory and physiology of the action of narcotic drugs; considerable space is devoted to the use of carbon dioxide. In the illustrations of the practice of inhalation anæsthesia the representation of a Clover's ether inhaler shows one of the old narrow-bore kind now rarely seen in practice in Clover's own country. This instrument is probably little used in Italy either; a regulating inhaler bearing the name "Dogliotti-Giordanego" pictured as well as the well-known Ombrédanne, which has long been in vogue on the continent, take the Clover's place. The most important section of this work for the British reader deals with spinal injection; here he will find described the method devised by Dogliotti himself and so enthusiastically adopted by some French authorities. This is the method of segmental peridural analgesia. Its technique is fully explained and its advantages over the usual endotheal injection are demonstrated. The author does not deny the difficulties associated with its use; he is apparently unaware of the device introduced by his French disciple in order to simplify the technique. The book is well printed and copiously illustrated.

Manual of Human Physiology

Fourth edition. By Sir LEONARD HILL, M.B., LL.D., F.R.S. London: Edward Arnold and Co. 1935. Pp. 470. 6s. 6d.

This little book does not pretend to be an authoritative work, but furnishes an excellent introduction to physiology for those who have received no special training in anatomy or the preliminary sciences. It has been brought sufficiently up to date in revision to continue to fulfil its purpose; the chapter on reproduction is a welcome addition from every point of view. There are now several semi-popular treatments of physiology available, and if asked wherein the present work differs from the rest one would cite its biological approach and its style. The first

fifty pages are devoted to a consideration of life in general, and living organisms are placed in their correct relationship to the rest of the universe. Throughout the book no pains are spared to explain the fundamental scientific basis of the processes described, and if details of the latter are sacrificed on this account the reader may consider himself rather fortunate than otherwise. The style is vivid and the text well stocked with original illustrations and analogies drawn from everyday experience. The book should appeal to a wide range of readers, and will hold their interest.

Quarterly Journal of Medicine

THE October issue (vol. iv., No. 16) contains six papers.

ROBERTSON F. OGILVIE (Edinburgh) has inquired into the contention that in the early stages of obesity there is hyperinsulinæmia with increased sugar tolerance and that this is followed in course of time by hyperinsulinæmia with decreased sugar tolerance. He finds that sugar tolerance diminishes as the duration of obesity increases; the final state may be diabetes. In about a third of 65 obese subjects there was a preliminary phase of increased tolerance. It was observed that deficient ovarian function, premature exhaustion, or destruction of the ovaries produced a definite lowering of sugar tolerance, but whether this occurs in obese subjects only has yet to be determined.

In a study of ten cases of idiopathic steatorrhœa TH. E. HESS THAYSEN (Copenhagen) demonstrates that this derangement of metabolism is characterised by (1) an abnormally high excretion of fat in the faeces; (2) a normal or sometimes slightly increased nitrogen excretion; (3) a flat blood-sugar curve; and (4) a raised rate of basal metabolism. The steatorrhœa, however, is the primary manifestation. Among other problems he considers are the relation of hypovitaminosis B to the hyperchromic anemia and the patches of pigmentation often observed in both tropical and non-tropical sprue and the variations in the possible aetiology of the flat blood-sugar curve frequently associated with these conditions.

MARJORIE GILESPIE (London) has investigated the incidence of hypochlorhydria in asthma with special reference to age-incidence. Low free acidity was found in 51 per cent. of 109 asthmatics, and low total acid in 41 per cent. In allergic subjects there seems to be a tendency for gastric acidity to increase about puberty. Sensitivity as shown by skin tests had no apparent relation to hypochlorhydria, but improvement in acidity in originally hypochlorhydric cases coincided with clinical improvement.

I. HARRIS, E. WYN JONES, and C. N. ALDRED (Liverpool) have examined the pH, lactic acid, and alkali reserve values of the blood in different types of heart disease both under resting conditions and after a standard exercise.

An investigation into the skin reactivity to glycerinated veal broth and its bearing on the specificity of the tuberculin reaction is described by JULES FREUND and P. D'ANCY HART, working in New York. The importance of knowing whether false positive reactions to ordinary doses of tuberculin as a result of sensitivity to the glycerinated veal peptone broth used as a culture medium in preparing old tuberculin was made clear; since if the incidence of the false positive reaction was significant then the use of a control became imperative. It was possible to show that the occurrence of reactions to glycerinated veal broth did not affect the significance of the positive reactions to routine doses of old tuberculin, and that the use of broth controls in routine tuberculin therapy was unnecessary.

RONALD V. CHRISTIE (Montreal) has studied certain types of respiratory neuroses. He is able to show that respiratory tracings taken with an ordinary recording spirometer are of value in the diagnosis and differential diagnosis of certain types of respiratory neuroses and that the incidence of these neuroses is much higher than was generally supposed.

An account is given of the annual meeting of the Association of Physicians held in London last June.

THE LANCET

LONDON: SATURDAY, NOVEMBER 9, 1935

MIND AND SKIN

THE work of the pioneer psychopathologists and psycho-analysts has already influenced medicine to an extent that can be estimated only by those who remember the outlook of pre-war days or are interested enough to study the text-books of those times. With the carrying out of the recommendations of the Curriculum Conference concerning the teaching of psychopathology in our medical schools, practitioners and specialists of the near future will accept as intrinsic parts of the clinical picture such factors as those described in two papers read at the summer meeting of the American Medical Association. These communications illustrate the growing influence of psychology on a form of practice with which it has at first sight little to do. In the first Dr. STOKES¹ gives a surprisingly long list of dermatoses in which a technique of "office analysis" is an important element in recovery. He believes that the type of personality rather than adventitious circumstances influences the cutaneous outbreak; thus "leaders, drivers, tyrants, and hypereffectives in general explode into the cutaneous neurogenous field under stress, excess or frustration." He describes the many signs that betray psychological tension and links these with conditions of vasomotor status and the sweat mechanism, anomalies of which may provide a background for the cutaneous mycoses. Other physiological reactions to stress occur in the sphere of gastro-intestinal function, and in turn induce allergic skin manifestations such as urticaria. But the special lesson STOKES would teach is the recognition and treatment of what he calls the neurogenic factor, and the fifteen years he has devoted to the development of technique have ripened a method of examination and treatment which he finds most helpful—though it needs "an extended and well-digested life experience," in the absence of which psychiatric effort tends to be a skeleton science of mind without flesh of human nature. He excludes from his method pronounced grades of warping of the personality, neurasthenic and psychasthenic collapse, or grades of conduct disorder demanding the use of the full psycho-analytic procedure. His findings reveal on the one hand temperamental or reaction types and on the other those conditions in the environment that seem to act as stimuli in producing symptoms. The distribution of these predisposing and exciting factors seems to vary greatly between one group of skin disorders and another, the "tension frame of mind" occur-

ring, for example, in 41 per cent. of urticaria cases and being absent in rosacea, whilst in the latter chronic worry seems to predominate.

The authors of the second paper² have paid more attention to physical reactions, and, whilst giving validity to the investigation of the "psycho-motor panel," assume the primacy of structure over function by postulating an inborn protoplasmic instability as the condition underlying all the phenomena concerned. This postulate is significant as indicating a fundamental attitude towards the age-long problem of animism versus mechanism, and Dr. STOKES's use of the word *neurogenic* where others would say *psychogenic* possesses the same significance. It is plain that the writers were, like most of us, educated in the mechanistic school but have been driven by clinical needs to study their patients as human personalities with emotional or instinctive drives and reactions; the use of a biochemical terminology does not invalidate that study.

Some apposite comments appear in the discussions that followed these papers. Dr. BECKER noted that medicine is in a state of transition in which internists, endocrinologists, and gastroenterologists are gradually focusing their attention on so-called functional diseases; the work of Dr. STOKES was welcomed as a return to the art of clinical medicine. These papers are, indeed, indicative of a general movement which, whilst progressive, promises an equivalent of what has been lamented as almost a lost advantage—the experience and intuition of the family practitioner who "knew his patient's constitution." We see specialists coming to recognise that behind the processes of disease as revealed by the laboratory there are other processes which, though incapable of being weighed or measured, must yet be earnestly studied as elements of prognosis and treatment if not of diagnosis. It no longer suffices to note that such and such a condition occurs frequently in neurotic or highly strung people; the states thus described are capable of productive investigation, for which modern psychopathology offers a systematised and informed method of approach.

ACUTE PANCREATIC NECROSIS

THE ætiology of acute hæmorrhagic necrosis of the pancreas has been much discussed since the disease was first described by FITZ in 1889. There is general agreement that the basic process is a self-digestion of the pancreas due to activation of the trypsinogen it secretes. Normally this ferment is turned into active trypsin only after the secretion has passed from the gland into the duodenum and come into contact with the enterokinase of the succus entericus; and the reason for its untimely activation in acute pancreatitis is still in doubt. Some authorities find the explanation in infection, which may reach the pancreas either by direct extension (e.g., from a peptic ulcer) or via the blood stream or lymphatics. Blood-borne infection offers the best

¹ Stokes, J. H.: Functional Neuroses as Complications of Organic Disease; an "office" method of approach, with special reference to the neurodermatoses, Jour. Amer. Med. Assoc., Sept. 28th, 1935, p. 1008.

² van de Erve, J. M., and Becker, S. W.: Functional Studies in Patients with the Neurodermatoses, Ibid., Oct. 5th, 1935, p. 1103.

explanation of the cases in which pancreatitis complicates mumps or other acute fevers, while lymphatic extension has been held to account for the acknowledged relationship between pancreatic necrosis and disease of the biliary tract. The theory of bile retrojection depends on the fact that acute necrosis has been produced in animals by injecting normal bile into the duct during the period of digestive activity. The possibility is suggested that obstruction at the orifice of the duct, due to spasm of the sphincter of Oddi or impaction of a gall-stone, may lead to a similar state of affairs in human beings; but, as PARRY and MURRAY¹ point out, the anatomical arrangement of the ducts is seldom such as to allow regurgitation. Moreover, though it is common in cases of pancreatic necrosis to find stones in the gall-bladder, it is rare to find one in the common bile-duct; for example, HAWE² states that of 11 patients submitted to operation 7 had stones in the gall-bladder and none had stones in the duct. Another theory is that duodenal contents, containing the normal activator, enterokinase, may gain admission to the duct of Wirsung because of a lesion of the sphincter or the entry of a round-worm. Experiment certainly shows that pancreatic necrosis can be provoked by injecting duodenal contents into the duct. Trauma has sometimes been noted in the history, and the idea has been put forward that this is responsible either by leading to an effusion of blood containing activating substances, or by forcing duodenal contents into the duct. Where no other lesion can be found, vascular disturbance (thrombosis, embolism, or spasm) has been postulated as a cause. The conclusion seems to be that no one hypothesis will cover all cases. As Dr. DOBBS shows in a communication we published last week, the disease is by no means unknown in children, in whom several of the factors mentioned above can be excluded.

Brocq³ has well described the train of events started by the intraglandular conversion of trypsinogen to trypsin. The latter destroys indiscriminately acinar tissue, islets, and blood-vessels, forming a mixture of blood, free ferments, and products of proteolysis, at first confined to the gland but soon escaping into the peritoneal cavity. Absorption of the products of tryptic digestion results in severe intoxication and shock. The lipase produces those white flecks of so-called fat necrosis which are conspicuous at operation. The amylase has no local ill-effects; it is absorbed into the blood stream and appears in the urine. Destruction of insular tissue, if widespread enough, leads to disturbance of carbohydrate metabolism, with hyperglycæmia and glycosuria. At first, however, the typical case presents itself as an "acute upper abdomen" of very sudden onset. Comparing it with other abdominal emergencies TONDEUR⁴ emphasises the rapidity with which the general condition deteriorates in pancreatitis.

The patient, most commonly a woman, is usually fat and middle-aged and often gives a history of previous biliary disease, sometimes of alcoholism. The pain is epigastric, radiating to the back and sometimes to the left shoulder, and quickly grows more intense. There is vomiting and profound shock. Cyanosis is sometimes observed, and there may be bluish discoloration of the abdominal wall, due to altered blood. The abdomen is slightly distended and there is great tenderness in the epigastrium, especially just to the left of the midline. Rigidity is relatively slight, or may be absent; an indefinite mass may be felt in the epigastrium. In the less typical cases it is often impossible to differentiate between acute pancreatic necrosis and other acute intra-abdominal lesions. A high degree of leucocytosis is said to be characteristic, and certain chemical tests may assist diagnosis. According to BERNHARD⁵ about 95 per cent. of cases show a notable increase of diastase in the serum and urine; in about 10 per cent., and in every severe case, there is glycosuria, and in 50 per cent. sugar tolerance is much reduced, a dose of 50 g. of glucose by mouth sufficing to produce glycosuria if this is not already present.

By way of remedy, early laparotomy is usually advised after careful preoperative treatment of shock. The chief argument against expectant treatment is that the diagnosis may be wrong; even if adequate drainage of the pancreas is impossible—as opponents of early operation maintain—and laparotomy possibly harmful, operation at least ensures that perforated peptic ulcers, for example, shall not go untreated because unrecognised. When pancreatitis is in fact revealed some surgeons rest content with the confirmation, but most will insert a drain down to the pancreas. In the presence of biliary disease radical treatment is usually best postponed; but cholecystostomy, with a view to relief of tension, may be done if thought advisable. TONDEUR thinks that aspiration of the gall-bladder is always a wise step if no signs of biliary disease are otherwise detected, for in one of his six cases he obtained purulent bile from an apparently normal gall-bladder. In any event, should the patient recover, radical treatment should not be too long delayed. Recurrence of the pancreatic lesion is not uncommon, and whatever may be the cause of pancreatitis the frequency with which biliary disease is found in these patients justifies the belief that it has something to do with the catastrophe. Another sequel to recovery may be diabetes mellitus; BERNHARD puts the incidence at 10 per cent. of non-fatal cases.

AN INSTRUCTIVE ORGANISM

BOVINE pleuropneumonia does not attack human beings but the micro-organism which causes it is regarded with interest by workers outside purely veterinary medicine. The reason is that it is an example of a virus which is filtrable and yet (unlike other so-called filtrable viruses) capable of growing on simple artificial media. The fact

¹ Parry, J. R., and Murray, K.: *Canad. Med. Assoc. Jour.*, 1934, **xxxi**, 592.

² Howe, P.: *Liverpool Med.-Chir. Jour.*, 1935, **xliii**, 105.

³ Brocq, P.: *Presse méd.*, 1935, **xliii**, 217.

⁴ Tondeur, F.: *Scalpel*, Sept. 28th, 1935, p. 1209.

⁵ Bernhard, F.: *Deut. med. Woch.*, 1935, **lxi**, 667.

hat it can be cultivated in this way has induced investigators to believe that its nature and mode of reproduction would be discovered relatively easily. That this belief is unjustified is amply proved by the many discordant findings published since 1898 when NOCARD and his colleagues first demonstrated the possibility of growing the virus. Indeed only now, after the lapse of nearly forty years, do we seem to be reaching the truth of the matter.

The story of the growth of our knowledge of this micro-organism deserves to be borne in mind by all who are studying viruses of unknown nature. The agent of pleuropneumonia first became known to us as an ultramicroscopic virus, which, however, was soon shown to be cultivable on artificial media. Probably as the result of successful cultivation investigators turned to the morphological examination of the virus with renewed confidence, and in 1910 two independent series of observations by BORDET and by BORREL and his colleagues showed that it was definitely visible with the microscope. The French workers described a variety of forms—star-shaped or asteroid bodies, coccal forms, and fine branching mycelial filaments—and struck by the importance of the first of these they proposed the name "*Asterococcus mycoides*" for this micro-organism. From now onwards repeated attempts were made to investigate the problem, with widely differing results. There is no need to set out the various findings which have been recorded, but putting aside those which questioned the possibility of seeing the virus, either in stained preparations or by dark-ground illumination, the striking thing has been the diverse modes of reproduction described; there seemed to be almost as many modes of reproduction as there were observers. The work of the last two years has gone a long way to clarify the situation. From a study of this organism and the closely allied one which causes agalactia in sheep and goats, LEDINGHAM¹ has given us a comprehensive picture of their modes of growth and reproduction. He relied mainly on fixed and stained preparations; in particular he studied the structure of colonies growing on solid media by means of impression preparations. He was able to identify almost all the forms seen by previous workers and showed that these were merely different forms of multiplication of a highly pleomorphic organism, which in his opinion has fungal affinities and should no longer be grouped with the viruses. He considers that the micro-organisms of bovine pleuropneumonia and agalactia belong to the family actinomycetaceæ.

Since LEDINGHAM's findings appeared three more papers on the subject have been published. One of these, by MERLING-EISENBERG,² does not support his views, for EISENBERG concludes that the essential forms presented by the organism are elementary bodies and discs from which further elementary bodies arise by a process of budding; he suggests that the branching mycelium described by others is an artefact. The other two papers,

one by TANG, WEI, McWHIRTER, and EDGAR³ the second and more recent by A. W. TURNER,⁴ present observations which are in substantial agreement with those of LEDINGHAM. TURNER relied almost exclusively on the study of fluid cultures by dark-ground illumination and his paper is illustrated by beautiful photomicrographs. In some of these one sees branching mycelium which has every appearance of reality, and TURNER, like LEDINGHAM, concludes that the organism of bovine pleuropneumonia is highly pleomorphic and possesses a number of methods of reproduction. He hesitates to classify it with the actinomycetaceæ, and proposes making a new order—borrelomycetales—in which to place this and the closely allied organism of agalactia. But whatever systematic rank is finally decided on for these two organisms it is clear that they can no longer remain with the filtrable viruses; it is only the fact that one or more of their growth phases is sufficiently small or plastic to pass through filters that has been responsible for this erroneous grouping in the past.

ST. BART.'S MEDICAL COLLEGE

THE PRINCE OF WALES was present on Tuesday at the annual dinner of old students of St. Bartholomew's Hospital which celebrated the opening of the new Medical College in Charterhouse-square for the teaching of pre-clinical subjects. Mr. W. Girling Ball, dean of the college, presided and there were 100 guests, including the Chancellor of London University and the Lord Mayor and Sheriffs, with more than 300 old students. The Prince recalled his visit two years ago and congratulated the dean on what had been accomplished in this time. "We take off our hats to you," he said, "for having got on with the job so quickly"; and speaking as "honorary perpetual student" of the college he welcomed the opportunities of study and research, of which he said, "neither could exist without the other." Mr. Girling Ball remarked that John Abernethy's school had gone on happily for nearly a century within the hospital walls, until the time came for an expansion for which no space could be found. It was in his second year of office that the Merchant Taylors, of which foundation he was a scholar, retired into the country, leaving the Charterhouse free. It had, he said, been a great effort, to which Bart.'s men themselves were contributing more than £55,000. In the near future the scheme was to be completed by the erection of a residential college on the site; "now," he concluded, "we are a real academic institution." The Lord Mayor, in reply to a toast, said that the Corporation of London was watching over the destiny of the school of St. Bartholomew's with a jealous care and regard, and on behalf of London University Lord Macmillan, chairman of the court, spoke of the achievement of an enterprise so full of vision. The work of research would be the great medical mission of the future; to-night, he said, we have seen another milestone passed. Lord Horder paid tribute to the drive, persistence, and indomitable pluck of the dean who had now realised one part of the vision that he had of the integration of medical education in London. Mr. Girling Ball, in reply, said it was the spirit of Abernethy which had always inspired him. On leaving Merchant Taylors to enter Bart.'s he had resolved to do something worthy of both.

¹ Ledingham, J. C. G.: *Jour. Path. and Bact.*, 1933, xxxvii., 393.
² Merling-Eisenberg, K. B.: *Brit. Jr. Exp. Path.*, 1935, xvi., 411.

³ Tang, F. F., Wei, H., McWhirter, D. L., and Edgar, J.: *Jour. Path. and Bact.*, 1935, xli., 391.

⁴ Turner, A. W.: *Ibid.*, 1935, xli., 1.

ANNOTATIONS

EVOLUTION OF CILIARY ACTION

Forty years ago Sir StClair Thomson and Prof. R. T. Hewlett communicated to the Royal Medical and Chirurgical Society their observations on the fate of micro-organisms in inspired air. Although hourly thousands of bacteria must in ordinary town life pass into the nose, it is rather unusual to find any in the cavities of healthy persons. The vibrissæ of the vestibules filter off most of the bacteria, the remainder being ejected later by the action of the ciliated epithelium. Since then Sir StClair has never ceased to work at the defensive arrangements of the air-passages, and his Semon lecture delivered last week at the invitation of London University summed up what had been discovered about the local means of protection in normal health. It would be easy to conclude either from previous knowledge alone, or under the influence of Sir StClair's persuasive address, that cilia are placed in the respiratory tract primarily to expel bacteria. But this would be only part of the truth, for cilia serve many purposes in the animal economy. Ciliary action depends on protoplasmic flow into and out of a curved tube; filling causes an effective or active stroke, with straightening, while emptying, during the recovery-stroke, is an elastic recoil to the resting position. The action may continue independently of nervous impulses and may survive in a single isolated epithelial cell. The movements are conveyed directly from one cell to its neighbour, and also from cilium to cilium in individual cells. A somewhat similar movement may be observed in simple organisms such as amœbæ; the movements of the protoplasm cause temporary protrusions or pseudopodia. Cilia are permanent projections and represent a specialised mechanism for movement in many primitive aquatic animalculæ. They allow of more rapid progression than is possible with pseudopodia, as may be noticed by watching the activity of paramecium. Cilia thus function as organs of locomotion, but other duties are performed by them. In molluscs and other invertebrates they maintain circulation of water in definite streams, so designed as to collect particles of food, or to serve respiratory purposes. Coming nearer to the subject of the Semon lecture, it is found that in the olfactory organ of some fish, such as eels, circulation of water through the primitive nose depends on ciliary action. The sense of smell is served by an olfactory rosette, with inlet and outlet, but entirely unconnected with the respiratory organs or alimentary canal. Constant circulation of water is required to carry in odours and prevent blockage by mud or other debris.

There can be little doubt that corresponding olfactory necessities call for a similar mechanism in higher animals. Many mammals depend for their existence on the detection of other animals in the neighbourhood. Thus carnivores scent their prey, while herbivorous animals—feeding with their tails to the wind—are warned by their sense of smell of the approach of enemies from behind. Their eyes protect them from attack in front and on the flanks. The eyes, thus occupied, may not be used to pick out suitable food, but the nose serves this purpose, as observed by watching oxen eating grass and avoiding intermingled buttercups. To keep the nose clean and the olfactory sense ready for the perception of fresh and possibly dangerous scents, the various stale odours and any obstructing solid particles must be removed. Odours go into solution

in the nasal mucus before stimulating the olfactory nerve-endings. By means of the cilia this blanket of mucus is perpetually driven back to the nasopharynx, thus allowing new scents to be thrown into solution in fresh mucus, with stimulation of the olfactory nerve-endings. But while as a fact of evolution the nose is primarily an olfactory organ, the mechanism of ciliary movement, with constant backward flow of mucus, automatically removes from the nasal passages all solid particles, such as dust and gives protection against bacterial invasion. Mucus may inhibit bacterial action and phagocytes be ready to envelop them, but if all debris, including bacteria, are rapidly removed from the nose and conveyed through the gullet to the stomach, invasion by organisms is prevented.

The fact that the olfactory sense of man is comparatively feeble naturally diverts attention from the mechanism described, but, when considered in its true light, it opens up the question whether the nose merely looks after its own cleansing, or whether it is in addition a protector of the lower air-passages against bacterial invasion. The nasal fossæ in health are sterile, but from the nasopharynx of a healthy subject a variety of pathogenic micro-organisms may be cultivated. Many bacteria reach the lower air-passages, not only from the nasopharynx, but also drawn in through the open mouth, as during speech. The trachea and bronchi, however, have their own ciliary mechanism for removal of fluid or solid particles, including bacteria; such a mechanism is essential in air-breathing animals. In this connexion Sir StClair drew attention to the healthiness of many persons with permanent tracheostomy openings, emphasising their relative immunity from respiratory disorders. As regards the possibility of further evolutionary changes, it would be difficult to visualise a mechanism more efficient than ciliary action for scavenging immobile cavities such as the nasal fossæ, paranasal sinuses, or middle-ear cleft. The tracheobronchial tree also is efficiently served by cilia, for although its components are capable of varying degrees of closure by muscular action during expiration, yet they must be semi-rigid to prevent excessive or premature closure, with entrapment of air, as may occur in asthma.

A FATAL DISEASE OF SALMON

FURUNCULOSIS is a specific infective disease which has long caused much loss to the salmon and trout fisheries of this country. The departmental committee, appointed in July, 1929, by the Ministry of Agriculture, has just issued its final report,¹ having reached definite conclusions as to the distribution, cause, and means of spread of the disease. Two interim reports have appeared, one of which² contained a recommendation for preventing its further spread which has unfortunately not yet been acted on. The final report contains a summary of all the observations which have been made and of the experimental work done since 1929. Large numbers of fish have been examined for evidences of the disease and the presence of the *Bacillus salmonicida*, and experiments conducted in tanks and ponds have demonstrated means of transmission and the effect of external conditions especially the temperature of the water. The disease has spread considerably of late years; 31 areas of infection are

¹ Edinburgh: H.M. Stationery Office. 2s. 6d.

² THE LANCET, 1933, II., 1135.

known in England and Wales, and 28 in Scotland. The evidence points to extension being due to the importation of fish from infected fresh waters and not to the entrance into rivers of diseased fish from the sea. Infection may take place as the result of contamination of the water or of food; crowding of the fish and a water temperature of 55° to 66° F. are the chief conditions favouring an outbreak. Of interest to pathologists is the occurrence of large numbers of apparently healthy carriers in which the specific organism is localised in the kidney. In these carriers the infection may remain latent for a long time, producing acute disease if the circumstances are suitable. Yearling fish and fry are remarkably resistant to infection. It has been shown that the eggs are not infected internally and can be disinfected with acriflavine without injury. The committee's main recommendations are that the Government departments should have power to inspect fish farms and to prohibit the moving of fish from infected waters, that the occurrence of disease or undue mortality among fish should be notifiable, and that live fresh-water fish should only be imported from abroad under licence. The maintenance of a laboratory for the examination of fish would be essential. A Bill introduced into Parliament in 1934 embodied these recommendations, but did not get a third reading. Considering the heavy loss from furunculosis and its progressive spread it is to be hoped that the Bill will soon be reintroduced and become law.

DIAGNOSIS IN RECTAL HÆMORRHAGE

THE importance of thoroughly investigating a case of rectal hæmorrhage lies not only in the fact that the bleeding may arise from such a serious source as a rectal carcinoma, but also that even when the cause is traced to internal piles, long-continued loss of blood may produce a severe anæmia. E. A. Daniels,¹ of Montreal, points out that this anæmia may seem to be out of proportion to the blood loss. Some patients are apparently incapable of compensating adequately for a steady and long-continued bleeding, while in others the loss of very considerable amounts of blood may produce no grave effects.

Early and excessive loss of blood is not a symptom of any common rectal disease except hæmorrhoids; in carcinoma it occurs rather late, though when it does arise it may be a most troublesome feature. In fissure-in-ano bleeding is occasionally rather sharp, but it occurs only when the fissure is torn open by the act of defecation, and the usual history is that the blood just streaks the motions. The same tearing of the mucous surface may also cause bleeding in cases of stenosis of the anus. Fæcal impaction is another possible, though uncommon, cause of rectal bleeding. The hard, scybalous mass may damage the mucosa of the hæmorrhoidal area, and, owing to the rarity of this cause of bleeding, the findings may be wrongly interpreted, and the hard mass be mistaken for a growth filling the rectum. The symptoms of pain and pressure in the rectum, with bleeding, suggest either a growth or a fissure. Certain diseases of the colon may involve the rectum and cause bleeding from its surface. Such are familial polyposis intestini and colo-proctitis. Sigmoidoscopy will reveal the nature of the lesion and its upward extension beyond the rectum. Acute proctitis may cause such free bleeding as to block the view through the proctoscope. In acute amœbic enterocolitis,

the onset, as Daniels points out, may be sudden, in a previously healthy person, and the bleeding from the ulcerated surfaces may be entirely missed. The colicky, right-sided abdominal pain may simulate appendicitis and even lead to operation in the absence of sigmoidoscopy, which reveals œdema, hyperæmia, and mucopurulent exudation, mixed with blood. Daniels mentions another type of colo-proctitis which occurs as a terminal complication of very severe illness, such as uræmia, typhoid fever, and septicæmia, and also in certain cases of avitaminosis; adenomata and papillomata and tuberculous proctitis are rare causes of bleeding which are easily diagnosed by sigmoidoscopy or proctoscopy. Daniels describes two varieties of internal hæmorrhoids, both usually amenable to cure by injection. In one, the appearance is of a redundant ring of veins, which prolapse into the proctoscope, and may, of course, prolapse below the anal sphincter. The three main hæmorrhoids are situated in the left lateral, right anterior, and right posterior positions of the anal circumference. Owing to the looseness of the attachment of the mucosa, the position of the hæmorrhoids varies with the position in which the patient happens to be examined. The second type of hæmorrhoidal lesion is a vascular ring, bleeding easily when touched and situated at the base of the columns of Morgagni. The treatment advised by Daniels is a submucous injection of 5 per cent. carbolic acid in sweet almond oil. In the second type of lesion the injections are placed into and just above the ring of vascularity. In the commoner type of definite varices the injections are made high up in the submucosa, and the solution distributed down to the base of the hæmorrhoids: 5-10 c.cm. are used at a sitting.

In the diagnosis of the cause of rectal bleeding, the important practical points are: (1) to rule out rectal carcinoma; (2) to determine the presence or absence of an anal fissure, as considerable acute pain may be caused by the passage of the proctoscope for the treatment of piles if the fissure is not first dealt with; (3) having diagnosed the presence of piles, to decide that they are not a complication of some such condition as portal obstruction or pelvic tumour; and also to satisfy oneself that the bleeding is indeed coming from the piles and not from a lesion higher up, such as peptic ulceration. The therapeutic test, of a few injections to cure the piles, followed by a careful watch for further bleeding, may be of value in doubtful cases.

URINARY INFECTIONS

THE symposium on urinary infections in the latest volume of the St. Bartholomew's Hospital Reports (1935) includes an account of the anatomy and physiology of the kidney by Mr. A. M. Boyd, and contributions from a physician, a surgeon, an obstetrician, and a bacteriologist. The result is a clear and useful survey of a problem with which almost every department of medicine is concerned. Dr. Geoffrey Evans supports one of the two main theories of the ætiology of urinary infection when he visualises, in the normal person, a regular or frequent passage of coliform bacilli in the blood stream to the kidneys and their excretion in the urine. He subscribes to the thesis, recently stated afresh by Dr. A. L. Clark,¹ that irregular action of the large gut is responsible for the persistent presence of *B. coli* in the urine of some patients. Mr. J. Beattie, however, discussing urinary infections associated with pregnancy,

¹ Canadian Med. Assoc. Jour., September, 1935, p. 287.

¹ Amer. Jour. Surg., 1935, xxxix, 354.

expresses the belief that the organisms may reach not only the bladder but also the ureters and renal pelves by spread from below, and he brings forward statistical evidence in support of this view. There is now general agreement that, by whatever route the organisms may reach the urinary tract, they do not normally settle there except in the presence of some underlying obstructive lesion. The importance of a thorough investigation of every case of chronic urinary infection has often been stated, but no stronger argument in support of the need of complete urological examinations can be brought forward than the figures collected by Mr. W. Girling Ball. He selected 50 cases of chronic infection of the urinary tract, not in a consecutive series, but chosen either because they had been unsuccessfully treated for a long time without ever having had a complete examination, or else because symptoms of infection were the most prominent feature. Cases of urinary infection with an obvious underlying cause such as an enlarged prostate or a renal calculus were excluded. The 50 cases were thoroughly investigated for some underlying lesion which might be converting them into "carriers," and in no fewer than 38 (76 per cent.) of the cases such a lesion was found. Unilateral infection of the upper urinary passages was found in more than half (62 per cent.) of the cases, of which all but three were associated with a predisposing factor on the side of the infection. The routine investigation consisted first of a searching clinical examination, with a bacteriological analysis of the urine, and then of cystoscopy, ureteric catheterisation, and an X ray of the renal tracts (including pyelography). It might be argued that it is not justifiable to submit every patient with a mild chronic infection to so exhaustive an examination; but it is a striking fact that of the 50 cases reported by Mr. Girling Ball, 33 (66 per cent.) were completely cured by the treatment, where necessary surgical, of the discovered lesions. When it is remembered that these cases were selected for their chronicity and on account of the absence of any obvious predisposing causes, these figures represent a remarkable achievement in the treatment of an obstinate infection. Dr. Clark has suggested¹ that if patients with infected urines were placed on the ketogenic diet before such investigations as ureteric catheterisation and cystoscopy were performed, unpleasant complications such as catheter fever might be avoided, and this suggestion is well worth consideration.

The uses and limitations of urinary antiseptics were discussed at the recent B.M.A. meeting in Melbourne (see p. 1076). Dr. L. P. Garrod's contribution to the Bart.'s symposium consists of a survey of the various urinary antiseptics in common use, and a comparison of the clinical and laboratory claims made on their behalf with the result of a test devised to measure their true antiseptic value by a study of the bactericidal power of the urine excreted by patients taking the drugs. Of the urinary antiseptics tested, hexamine alone produced a truly bactericidal urine, such as is excreted by patients on the ketogenic diet. Yet, as Dr. Garrod notes, though some forty years have elapsed since hexamine was introduced into medicine, "misunderstanding and misuse have given it a chequered career." Hexamine by itself is not bactericidal and only when, in an acid medium, it decomposes to give off formaldehyde does it exert any antiseptic effect. Though acid sodium phosphate is widely used with hexamine to increase the urinary acidity, the resulting acidity is rarely measured, and in fact the necessary degree is much more readily

attained by the use of ammonium chloride. The control of urinary infections by medical treatment demands a careful supervision, not only of the patient, but of his urine. It is as illogical to hope for any effect to follow the administration of hexamine without ensuring that the urine becomes really acid, as it is to expect an acute urinary infection to respond to treatment with alkalis until the urine becomes alkaline.

UNRESTRICTED DIET FOR DIABETIC CHILDREN

SOME four years ago Stolte of Breslau recommended that diabetic children should eat whatever they like; and this recommendation is now supported by Prof. A. Lichtenstein¹ of Stockholm. Insulin, he feels, has been given too timidly, and even to-day its use is considered secondary to strict dieting, so that the child suffers all the hardships, physical and mental, of being rationed. In Friderichsen's words "from the psychological point of view, it is better to let the dosage of insulin be determined by the food than vice versa," and during the past two years Lichtenstein has let a score of diabetic children in his hospital and private practice enjoy a free diet. This is free both in kind and in quantity and the dosage of insulin is regulated in such a way that the general health is good, the gain of weight normal, and the urine is free from ketone bodies—glycosuria being permitted so long as weight increases satisfactorily. The ages of the patients ranged from 2½ to 16 years, and most of them were admitted to hospital so as to be under close supervision on passing from a restricted to an unrestricted diet. The transition proved remarkably easy, and the joy of patients and parents on the removal of all restrictions had to be seen to be believed; indeed the encouragement seemed to have a directly beneficial effect on the course of the disease. At first the children showed a voracious carbohydrate hunger which soon passed off, leaving them with an only somewhat higher carbohydrate consumption than when rationing was maintained. Thus, a 7-year-old boy who had been rationed to about 110 grammes of carbohydrate put away about 300 g. per day when allowed to eat what he liked, but later spontaneously reduced this quantity to about 200 g. So far from any ill-effects being observed, the sweeping-away of all dietetic restrictions seemed to be uniformly beneficial, to judge by an improved gain of weight and comparative freedom from intercurrent infections. The increased gain of weight probably depended not only on the increased supply of carbohydrates, but also on the total rise in the calories, children between the ages of 9 and 12 consuming 50–70 calories per kg. of body-weight. The dosage of insulin did not have to be raised correspondingly; there were cases in which it was not raised at all and some indeed in which it was actually lowered, though the carbohydrate intake had been doubled. Similarly, the excretion of sugar in the urine was surprisingly small. The frequency of the injections of insulin had to be increased from two to three a day, but on the credit side of the balance the risk of insulin overdose seemed to be diminished.

The cases in which this therapeutic revolution was accomplished were by no means slight and mild; all the patients had been in coma or had threatened coma once or oftener. Prof. Lichtenstein is accordingly persuaded of the great merits of the unrestricted diet; but he has yet to prove its real advantage over the properly regulated intake of food. Admittedly insulin has not been used with sufficient boldness

¹ Nord. med. tidskr., August 31st, 1935, p. 1329.

and every diabetic child should be given enough food and enough insulin to enable him to live a normal life, feel perfectly well, and develop normally. But if this aim can be fulfilled is there anything to be gained by giving an excess of carbohydrate? The free diet must mean occasional big rises in blood-sugar and increased glycosuria, which are theoretically objectionable and certainly (one would suppose) should not be risked within a couple of years of the onset of diabetes. The disadvantage of three daily injections is also obvious, and the regulation of dosage cannot be very easy.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

THE first decade of the London School of Hygiene and Tropical Medicine is briefly surveyed in the annual report of the board of management to the court of governors. Since its establishment in 1924 an imposing building, complete with modern laboratory and scientific equipment, has been erected; post-graduate courses of study in bacteriology and immunology, biochemistry, epidemiology and vital statistics, public health, and tropical medicine and hygiene have been established and developed under the guidance of distinguished teachers; and the separate institutions for the study of tropical medicine and tropical hygiene, founded respectively by Patrick Manson and Ronald Ross, have been incorporated in the school. The report of the dean, Prof. W. W. Jameson, for the year ended July, 1935, records the close and happy relations maintained with other scientific and professional organisations and the practical value to the staff of this association. Full advantage has been taken during the year of the policy of encouraging members of the staff to visit tropical and sub-tropical countries for the purpose of conducting special investigations or studying local problems. For example, Sir Malcolm Watson has visited Central and East Africa; Dr. Wigglesworth, Malaya, the Dutch East Indies, and Ceylon; Mr. J. J. C. Buckley, D.Sc., Assam; Dr. R. Mellanby, Uganda; Prof. P. A. Buxton, Macedonia; and Mr. H. H. Clay, India. During the year 179 students enrolled in one of the regular courses of instruction in addition to a considerable number who attended for short periods of more specialised study. The work on the isolation of a chemical substance of high immunological value from *B. aertrycke* which is being conducted by Prof. W. W. C. Topley, F.R.S., and Prof. H. Raistrick, F.R.S., has proceeded most successfully during the year. The grant which Imperial Chemical Industries Ltd. made towards the cost of this investigation came to an end on Sept. 30th, 1935, and some anxiety is felt about the money necessary to continue what is regarded as one of the most important and promising researches of recent years. Prof. G. S. Wilson has completed a very thorough study of the various methods of assessing the bacterial content of milk and his report, which should be of great practical value, is about to be published. The investigation on the lethal effects of oil on mosquito larvae is now in progress in Prof. Buxton's department; the cost of this work is being borne by three large petroleum companies. Attention is drawn by Prof. M. Greenwood, F.R.S., to the closer liaison between the division of epidemiology and vital statistics and official government departments; an inevitable result is that still more time has to be devoted by the personnel of the division to work which will either never appear in print at all, or, if published, will not be published over the names of the authors. Work of this kind is however regarded

as an essential duty, since the division enjoys the confidence of various public authorities who rely upon the staff to give them frank advice on various statistical and epidemiological matters, knowing that the confidence will be respected.

THE AIR-SWALLOWING INFANT

THOSE who live on fluid alone are almost bound to gulp in air with it, and Lereboullet and his colleagues¹ think air-swallowing a common source of trouble in infancy. Vomiting from this cause may begin, they point out, in the earliest days of life, being seen more often probably in breast-fed than in bottle-fed babies. It may be explosive or merely regurgitant, and the milk as returned may be curdled or not, according to how long it has been in the stomach. The child's appetite is likely to be excessive, but after three minutes' greedy feeding no more food is taken until relief has been obtained by an eructative vomit. In the early stages of the disturbance the general state remains good; the stools are normal and weight may be gained despite the vomiting. If the right diagnosis is made all will be well; but only too often the vomiting is attributed to dietetic error, and the baby is made to try a series of foods and formulæ, culminating perhaps in a true breakdown in digestion, with the "diarrhoea and vomiting" syndrome. Since all babies swallow air with their milk it may well be asked why they do not all suffer in consequence. Lereboullet's answer is that some swallow more and some less, and it is the greedy baby who, rapidly distending his stomach, is most likely to vomit. The degree and speed of evacuation of the air both by the upper and lower openings of the stomach also varies greatly, and the position in which the child is placed after feeding makes a difference. As part of treatment the French authors recommend that after an attempt has been made to "get up the wind" by holding the infant in the vertical position for the usual period, it should then be placed on its left side for a quarter of an hour, after which it remains on the right side till the next feed. They also advise the use of thickened feeds, or even the introduction of the milk through an œsophageal tube. For the breast-fed baby, to whom this programme is inapplicable, they suggest a teaspoonful of condensed milk or of a thick farinaceous paste immediately before feeds. Possibly, however, a drink of water would be equally effective; and there is another measure, also favoured in this country, which gets only rather grudging notice—namely, a small dose of a sedative (such as chloral) just before the feeds. In practice this problem is of real importance, for weaning is far too often carried out merely because of excessive air-swallowing by a baby who is otherwise thriving. Robert Hutchison teaches that chronic vomiting can be ignored if an infant is gaining weight, and this rule applies especially to the kind of case under discussion.

THE TEACHING OF ANÆSTHETICS

A LIVELY discussion was provoked by the presidential address of Dr. H. A. Richards to the section of anaesthetics of the Royal Society of Medicine on Nov. 1st. The points which aroused most interest centred round the teaching of anaesthetics to the student. The difficulties which confront the teacher of this subject are perhaps more formidable than those which the teacher of any other clinical subject must

¹ Lereboullet, P., Lelong, M., and Aimé, P.: Presse méd., Oct. 5th, 1935, p. 1541.

face. It is a question of what Dr. Richards aptly called the anaesthetist's "divided loyalty." If he does his best for the student he cannot at the same time do his best for the surgeon and for the patient. At a given operation it may be desirable to employ an elaborate technique and a complicated apparatus. What use is this experience to the student who in a year or two will be engaged in general practice? He is not going to possess the apparatus or have any suitable opportunity of exercising or advancing his slight acquaintance with the technique. So far as he is concerned his need is to be given competence to handle simple methods efficiently and safely. Moreover, the greater his freedom to work without supervision the better for him—but often the worse for the surgeon, who may have to wrestle with the consequences of an insufficient narcosis, from which the patient may also suffer indirectly. Some anaesthetists untie the Gordian knot by cutting it. They say in effect "I do my best for the patient and for the surgeon. The result is I rarely employ methods which can be used by the general practitioner; and there is no harm in this, for the sooner all anaesthetics are given by specialists the better, and then the student will not need to learn the technique unless he wants to take up the specialty." It was clear from the discussion which followed that the teaching anaesthetists disagree even on so fundamental a question as the relative positions of ether and chloroform as general anaesthetics. Some teachers, like Dr. H. P. Fairlie, would rule out the latter altogether; others, whose views were well expressed by Dr. Ashley Daly, argue that in general practice it is practically certain that sooner or later chloroform will be handled and therefore the student must be made familiar with the proper way of using it if its dangers are to be minimised. Dr. H. P. Crampton further complicated the issue by advancing the opinion that chloroform should be employed only by the specialist, in whose hands alone it is reasonably safe. Anaesthetics seems to be in a transition stage; some of its experienced practitioners achieve such excellent results using the same simple drugs and apparatus for all cases that it is difficult to convince them that these could be improved. On the other hand, the modern member of an operating team has an armamentarium so varied that he alters his technique for every type of case and naturally doubts the wisdom of attempting to teach it except to an aspiring specialist. It will be long, however, before the custom of mutual aid in anaesthetics, especially for minor operations, dies out among practitioners, especially in country districts, and in the public interest some way will have to be found to procure the preliminary experience necessary for such work.

VAGINITIS

VAGINAL discharges have a name for being intractable; but a fair proportion of successes may be expected from the more discriminating use of remedies which is now becoming possible. This improvement in therapeutics depends chiefly on greater accuracy in diagnosis and better knowledge of causation. For example, Cruickshank and Sharman,¹ and others, have lately demonstrated the profound influence which the ovarian follicular hormone exerts on the vaginal epithelium, and it is now recognised that the susceptibility of the mucosa to infection varies according to the physiological changes induced by

birth, puberty, marriage, childbirth, and the menopause. One result of these observations has been the attempt to utilise the ovarian follicular hormone (œstrin) in the treatment of vaginal infections, especially in the gonococcal vulvovaginitis of children, as described not long ago in our columns by Nabarro and Signy.² Reviewing the problem of diagnosis and treatment as a whole, Hubert Jacobs³ of Melbourne emphasises the importance of the patient's position during investigation and takes the view that the dorsal position is the most favourable for thorough examination and the taking of specimens. His statement that gonococcal vaginitis is extremely rare in women is in accordance with accepted ideas; on the other hand, King and Mascall⁴ have lately offered evidence that the gonococcus may persist for considerable periods in the adult vaginal fornices. In referring to gonococcal infections, Jacobs rightly demands a high standard in tests for cure; it should be pointed out, however, that reliance on examinations which do not include cultural and serological tests tends to leave a dangerous margin of error.

Vaginitis due to the flagellate *Trichomonas vaginalis* is very widespread and its diagnosis is easily confirmed by a simple microscopical test; but unfortunately many who treat these infections do not appear to realise this. Though the common practice of douching with the ordinary antiseptics is usually ineffective, there are methods of treatment which give good results, and elsewhere in our present issue Dr. Biskind describes a promising addition to those already available. Jacobs notes the occasional association of trichomonas infections and those due to the gonococcus; and recent experience in this country suggests that improved methods of gonococcal culture may prove this association to be common. Vaginal infections due to a fungus of the monilia group, termed variously aphthous vulvitis, mycotic vaginitis, or vaginal thrush, are relatively rare, but are readily recognised clinically and with the microscope. The response to treatment is usually satisfactory, but their frequent association with glycosuria should not be forgotten.

ON Thursday, Nov. 14th, at the University of Durham College of Medicine, Newcastle-upon-Tyne, Prof. Ferdinand Sauerbruch, director of the Chirurgisch Poliklinik at Berlin, will deliver the annual address to the medical society of the University on the position of modern surgery in the light of history. On Friday he will address the Newcastle and Northern Counties Medical Society at 4.15 P.M., in the Royal Victoria Infirmary, on the development of thoracic surgery.

ON Thursday, Nov. 21st, at 4 P.M., Mr. W. Sampson Handley will deliver the William Mitchell Banks lecture at the medical school of the University of Liverpool. He will speak on the prevention of cancer.

ON Tuesday, Nov. 19th, at 5 P.M., Sir Walter Langdon-Brown will deliver the fifth Victor Horsley memorial lecture at University College Hospital medical school. He will speak on the integration of the endocrine system, and Sir Gowland Hopkins, P.R.S., will take the chair. Medical practitioners will be admitted to the lecture on presentation of their visiting cards.

¹ Cruickshank, R., and Sharman, A.: Jour. Obst. and Gyn., Brit. Emp., 1934, xii., 190.

² Nabarro, D. N., and Signy, A. G.: THE LANCET, 1935, i., 604.

³ Jacobs, H.: Med. Jour. of Austral., July 27th, 1935, p. 101.

⁴ King, A. J., and Mascall, W. N.: THE LANCET, 1935, i., 1192.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXVI.—PROGNOSIS IN MIDDLE-EAR SUPPURATION

MIDDLE-EAR suppuration is met with at all periods of life from earliest infancy to extreme old age. It is responsible not only for an enormous amount of discomfort and suffering, but also for serious disabilities and, in many cases, gives rise to conditions whereby life itself is endangered. It is thus foolish to regard middle-ear suppuration as a trivial ailment, as was not unusual some years ago, and it is fortunate that in recent years a careful study of the aetiology and the natural course of the disease, together with the varieties of treatment and the alterations they have been found to effect, have improved the prognosis immensely in all directions.

In the vast majority of cases the infection reaches the middle ear via the Eustachian tube, although in sucklings there is reason to believe that the infection is more often blood-borne than in adults. The spread of infection from the pharynx or nasopharynx is usually the sequela of a cold or some more severe infection such as influenza or one of the specific fevers. Any unhealthy condition of the nasopharynx, for example adenoids, predisposes to the occurrence, and it has been known to follow plugging of the nasopharynx, or even of the nose after operations, or the entrance of blood or discharges into the Eustachian tube. The entrance of unclean water when diving or swimming under water is also a source of middle-ear suppuration.

Middle-ear suppuration occurs very readily in sucklings and infants as the Eustachian tube is comparatively short, wide, and straight, and in the early months of life the mucous membranes are very prone to infection. That the pharynx is often the site of infection is evident from the frequent association of an enlarged cervical gland and middle-ear suppuration. It is important that small infants should be kept from those suffering from the common cold, as a cold in the head, usually a trivial affair in adults, may be a serious matter in infancy. It would be a counsel of perfection to suggest that all young children suffering from colds should be kept in bed for a day or two, but if this were the rule, not only would the spread of infection be prevented, but the occurrence of middle-ear suppuration would be diminished.

When infection reaches the middle ear and suppuration occurs, the products of inflammation accumulate in the first place in the lower part of the tympanic cavity, the atrium. It will be remembered that the tympanic cavity may be considered as consisting of two parts, the lower or atrium, and the upper or attic. The atrium is a simple four-sided cavity lined by a thin adherent mucosa with very little connective tissue; the Eustachian tube opens into its anterior wall and its external wall is the tympanic membrane or ear-drum. The attic, on the other hand, is a complicated cavity, containing the ossicles and their numerous ligamentous connexions. These are covered over by folds or curtains of mucous membrane which further subdivide the cavity into compartments and which hang down and help to shut off this cavity from the atrium. The posterior part of the attic is directly continuous through the aditus into the

membrane, as in the atrium, but is formed by thick bony squama.

When the middle ear becomes infected, the products of suppuration accumulate in the atrium, Eustachian tube being closed by the congestion of the mucosa and the attic cavity mainly shut off by swelling of the mucous membranous folds of Tröltsch. As the pressure increases, the wall which offers the least resistance—namely, the external wall which is formed by the tympanic membrane—begins to show signs of the trouble behind it, and the subjective symptoms become correspondingly increased. These symptoms consist chiefly of earache and fever, whilst noise in the head are often complained of and deafness becomes noticeable. The pain may be sudden and sharp and often reaches a point at which it is almost unbearable, making sleep impossible. The temperature is raised, and, in children, is often 102° F. and more. The general condition deteriorates rapidly owing to fever, pain, and sleeplessness. The ear-drum shows signs of inflammation and is usually dark in appearance. The usual landmarks are lost in general swelling, which is most marked posteriorly and appears to cover the handle of the malleus. A definite bulge of the membrane is seen, most often in the postero-superior quadrant. The light reflex is lost. It should be noted that in very young infants this loss of light reflex may be the only sign in some cases, and also that bulging of a normal membrane may occur when an infant cries, so that too much reliance should not be placed on this appearance in the very young. In the average case the accumulation of the products of inflammation behind the drum causes it to rupture, and this may occur within 24 hours after the appearance of the initial earache or may be delayed for some days. If the drum is seen before it has ruptured and is bulging it should be incised. It is important that the incision should be carried upwards through the posterior fold out towards the meatal wall. This will ensure free drainage from the upper compartment and help to prevent the further extension of inflammation. When the drum bursts or is incised there is usually immediate cessation of pain and a fall in temperature. If the pain stops quickly it is a favourable sign; it probably indicates that the suppuration is confined to the atrium as pain due to attic suppuration is much less likely to be relieved at once.

With rupture of the drum the atrium empties its contents into the external auditory meatus. If free drainage is established resolution of inflammation should occur and the prognosis should be favourable unless adverse factors are at work, such as a very virulent infecting organism or some lack of resistance on the part of the patient. Old people seem to have a peculiarly low resistance to aural infections.

AFTER-TREATMENT

The object of after-treatment is to facilitate discharge from the tympanic cavity through perforation and to ensure that it is removed from the external auditory meatus and does not lie in contact against the drum membrane. Efficient after-treatment can therefore influence the prognosis very materially. Many methods of after-treatment have been adopted—an effective one is to place a gauze w

mopping or sucking out of discharge; but I prefer the use of dry insufflations of powder, such as a 1 per cent. iodine in boric powder, or Dimol, blown into the meatus each day after a thorough cleansing. The mass of dry powder against the drum seems to attract the discharge through the perforation very efficiently and it is quite extraordinary how much discharge the powder can absorb. The powder can be changed once or twice daily. As the discharge diminishes, the congestion of the Eustachian tube subsides and this canal provides a supplementary drain for the escape of fluid from the middle ear. The prognosis with regard to ultimate recovery is good and the drum heals without an apparent scar. The outlook as regards the hearing is difficult to foretell, but is usually good, except in some of those cases in which healing of the drum is, for some reason, unduly delayed.

COMPLICATIONS

If the discharge persists for more than three weeks one may assume that the inflammation is no longer limited but has spread to the attic and, in all probability, to the mastoid antrum as well. It may be that the infection of the attic was a primary one, as in some cases the infection seems to pass through the atrium and infect the attic or even the mastoid antrum from the beginning. Be that as it may, the prognosis is now altered for the worse. We have seen that the lining mucosa of the attic hangs in folds across the cavity and this vascular connective tissue forms a suitable medium for the growth of organisms. Moreover, the opening of the aditus is comparatively large and any pus which is formed may take the line of least resistance and pass backwards into the mastoid antrum. This involvement of the mastoid occurs in about 25 per cent. of all cases of acute middle-ear suppuration and as this is dangerous, not only on account of the likelihood of chronic suppuration after the acute stage is passed, with damage to the hearing, it is most important that it should be recognised at the first possible moment. It will be remembered that, developmentally, the mastoid antrum is merely a backward extension from the upper part of the tympanic cavity and is present before any mastoid process or cells appear. It is not unusual for some tenderness over the antrum to be present in moderately severe cases of middle-ear suppuration and this usually disappears if the drainage from the middle ear is freely provided for, but if it persists or extends the implication is that the mastoid cells themselves have become infected, the prognosis is not so good, and the mastoid will require opening. Again, reappearance of the discharge after it has stopped or nearly stopped, or the persistence of a very profuse discharge with pulsation, indicates the likelihood of mastoid involvement, as does the continuance or recurrence of pain. The most characteristic sign is a sagging of the postero-superior wall in the deepest part of the meatus.

It would be beyond the scope of this short article to consider the further signs and symptoms of acute mastoiditis and it will suffice to say that, should the surgeon decide that the mastoid is involved, nothing is gained by delaying operation unduly. If the mastoid has to be opened, naturally the time of recovery is lengthened, but the prognosis with regard to ultimate repair of the middle-ear suppuration and the restoration of function should not be adversely affected.

CHRONIC SUPPURATION

It is a common experience that a certain number of cases of acute middle-ear suppuration become chronic,

and it is sometimes difficult to say why this should be so. Neglect of treatment, constant reinfection by repeated colds, and the presence of adenoids are factors which favour the occurrence, whilst cases following measles and scarlet fever often fail to clear up quickly, as do some in which influenza is the source of infection.

It will be well to consider to what extent purely conservative measures are likely to be successful in the ordinary case of chronic middle-ear suppuration, and in what percentage of cases the prognosis is a good one. If after removal of adenoids and the adoption of some general cleansing measures for the ear suppuration still continues, a careful course of conservative treatment at the hands of an otologist should result in about 50 per cent. of ears becoming dry. There are many different methods of treatment but the one which gives the most satisfactory results is a modification of the dry method that is advocated for acute cases. In the chronic case it is advisable to clean the ear thoroughly, not only the external auditory meatus, but the middle ear also by irrigating it through an intratympanic cannula; the ear is then inflated by Valsalva's method to clear the middle ear of fluid, the meatus is again dried, and iodised boric powder is then blown in. In some cases polypi or small granulations may first have to be removed, particularly if the perforation is an attic one, and in these cases the prognosis is not so good, though many heal up quite satisfactorily. Some surgeons advocate the use of zinc ionisation, but I have not been able to satisfy myself that it yields superior results to the above method, and the cases in which it seems most successful—namely, those with large central perforations—are the very ones which respond most quickly to the more simple methods. If healing does not occur in two to three months it is probable that the suppuration is being kept up by some necrosis of the structures in the attic or in the mastoid, and a successful result is not likely to be obtained without a mastoid operation. It may be that a certain proportion of cases are doomed to this from the beginning and many of the most resistant ones may have a definite anatomical basis, as Arthur Cheate suggested many years ago. He found from examination of a large series of temporal bones that in 20 per cent. of all people the mastoid process remains of the acellular type, and that when the middle-ear tract is infected under these conditions and complete resolution does not take place or other complications occur, the disease passes into a chronic stage which may continue indefinitely and be associated with more or less destruction of the tympanic structures and the formation of polypoid granulations and cholesteatoma. In these cases a mastoid operation is necessary if the cure of the middle-ear suppuration is to be effected.

WALTER HOWARTH, F.R.C.S.,

Surgeon to the Ear and Throat Department,
St. Thomas's Hospital.

WEST SUFFOLK GENERAL HOSPITAL.—This institution at Bury St. Edmunds is embarking on an extension which will cost at least £25,000. At present there is only one ward for women and some of them have to be accommodated in the children's ward and in a small auxiliary ward. It is not always possible to separate the surgical and medical cases. The provision of a new children's ward is necessary and the present one can then be converted into a second ward for women. A private ward for paying patients is another urgent requirement.

SPECIAL ARTICLES

BRITISH MEDICAL ASSOCIATION

MEETING IN MELBOURNE

SECTION OF DERMATOLOGY

Dr. S. WATSON SMITH (Bournemouth) presided at a meeting of this section when Dr. HERMAN LAWRENCE read a paper on the incidence of

Skin Diseases in Australia

He compared the order of the commoner skin diseases in England, America, and Australia, and explained the reasons for these variations. Eczema, dermatitis, and seborrhœa occupied first place in all three countries. In England the second place was taken by ringworm, pediculosis, and scabies, whereas these hardly came into the picture at all in Australia owing to the difference in social conditions. The climate of Australia favoured an out-of-door life; the poorer classes lived in separate dwellings and had greater conveniences for personal cleanliness. In Australia the second place was filled by a group consisting of rodent ulcers, keratoses, and epitheliomata. This was due to two factors: (1) the increased amount of sunlight, and (2) the relatively low humidity. Adelaide had double the amount of sunlight and nearly half the humidity of London. In central Australia the average amount of sunlight was over 3000 hours per year, and the humidity under 30 per cent. The temperature was also much higher, rising to over 115° F. in the shade. The amount of ultra-violet light reaching the skin was therefore very great. Many of the patients had marked keratoses solares of the face, hands, ears, and forearms, without any signs of malignancy developing. After a history of the patient picking at the lesion, or perhaps of the application of CO₂ snow, one of the lesions would rapidly enlarge, and a frankly malignant epithelioma would develop. Italians and aborigines were almost free from these troubles. The bathless and sun-bathing cult, whilst lessening the likelihood of parasitic disease and skin tuberculosis, was a real menace in Australia as the cause of cancerous or precancerous lesions. Dr. Lawrence then described some rarer skin diseases of interest:—

Favus.—In 1917 a plague of millions of mice appeared in Queensland and travelled 1500 miles into South Australia. Some of the mice developed skin diseases which they passed on to human contacts. Many of the lesions were due to a parasite of the ringworm order, but the most troublesome ones from the point of view of treatment were due to an achorion—the *Achorion quinckeanum*. X ray therapy was of great value, especially in lessening the pain and shortening the time required for cure. Since 1917 there had been several minor troubles of this nature, and it was recognised that cases of favus, both in human beings and in mice, were more or less continuously present.

Dermanissus avium et gallinæ.—During the past 30 years Dr. Lawrence had many times found the dermanissus to be a cause of pruritus in patients who had nothing to do with poultry yards, and in several cases he had actually traced the parasite to abandoned birds' nests near windows. He suggested

mention of it. It was often difficult to cause of the pruritus to these parasites, as nocturnal in their habits, generally hiding daytime. The nests of starlings, pigeons, sparrows were most likely to harbour them.

"Collision value."—When gamma rays in direction collided with beta rays from the same direction, their combined action was termed by Dr. Lawrence "collision value." He mentioned this action in the treatment of keratoses and ulcers. The radium was held in metal holders and earthed. A high-frequency current was applied, with the patient standing on an insulating mat. In this way there was a veritable bombardment of rays and particles up to about 1 cm. distance. The treatment was rapid and effective, but care had to be exercised lest the absorbed beta particles caused necrosis of the tissues.

Dr. W. UPTON (Adelaide) in analysing 3000 cases had obtained figures similar to those of Dr. Lawrence but in his series scabies and ringworm were common. One case in eight was in the keratinized rodent ulcer—epithelioma group. Many were elderly women leading an outdoor life and using no cosmetics. He had seen 5 cases (in 25 years) of erythematous developing after severe grain itch was a common disease in South Australia. Lip cancer occurred in non-smokers after long sunburn and cracking of the lips.

Dr. F. H. MAKIN (Adelaide) gave an analysis of 3000 patients treated at a cancer clinic. There were 1774 skin lesions, hyperkeratoses, and 456 squamous-celled carcinoma of the skin. Rodent ulcers 887—many patients had multiple lesions. In addition, there were 188 cases of carcinoma. Nearly all were proved microscopically. Multiple keratoses were best treated by curettage. Ringworm of the feet and dhobie itch were common in South Australia, and cases of scabies seemed to be increasing.

Dr. J. M. O'DONNELL (Perth) also found hyperkeratosis a common complaint, particularly in the gold-fields. Psoriasis, ringworm of the scalp, and dhobie itch were common, and scabies was increasing. An epidemic of grain itch had occurred among wharf labourers.

Dr. J. WITTON FLYNN (Sydney) had found ringworm often enough to justify its inclusion among the 15 most common skin diseases.

Dr. J. H. KELLEY (Melbourne) had also found that sunburn predisposed to lupus erythematosus. Syphilitic diseases of the skin were now quite rare.

The PRESIDENT agreed that the low humidity and the increased amount of ultra-violet light in Australia were factors predisposing to skin cancer. Favus was unknown in England but common in South Australia. Dhobie itch was frequently found in boys' schools.

Dr. J. IVAN CONNOR (Melbourne) read a paper on the treatment of

Staphylococcal Infections of the Skin

Numerous lesions, he said, were produced by staphylococci, but these tended to remain true to type, that there were probably many different strains of the organism. Cases of syphilis rarely developed.

coccal lesions suggested that none of them could be relied on to promote recovery in obstinate cases. For this reason research work had been done on the staphylococcal exotoxin. Some strains produced more than one toxin, and each of the toxins (alpha and beta) could evoke a separate antitoxin. These toxins could be differentiated by their action on the red blood corpuscles of the rabbit and sheep. The alpha toxin, which probably played the major rôle in human infection, was hæmolytic, induced dermo-necrosis, and was lethal to animals; it also had the power of destroying the white blood corpuscles, and so contained a leucocidin. By incubating virulent staphylococcal exotoxin with formalin for several days, a toxoid was produced which could increase the titre of circulating antitoxin as much as 20 times. This produced an immunity in animals and an improvement in the clinical condition in man. In the treatment by toxoid injection a small dose of 0.05 c.cm. was used, gradually increased weekly according to the patient's reaction and condition, and to the blood antihæmolytic titre. In a small percentage of cases, local, focal, and general reactions occurred after the early injections of the series. It was wise therefore to start with very small doses when beginning treatment, or on resuming injections after an intermission. Eight injections usually cured furunculosis, but sycosis barbæ often required many more. Forty had been given in one case (12 c.cm.). The toxoid lost 40 per cent. of its antigenic power in six months in the ice-chest. In a series of 23 cases of sycosis barbæ and sycosis nuclæ treated with toxoid, 12 were regarded as cured, and the rest so improved that they ceased to attend the clinic. Of 24 cases of other staphylococcal infections, mainly furunculosis, 18 were cured and the remainder much improved. Antitoxin, given in an acute infection, could be followed during convalescence by injections of toxoid to stimulate and maintain the natural antitoxin of the patient at a high titre.

Dr. F. G. MORGAN (Melbourne) described his work at the Commonwealth laboratories in producing antitoxin. At present the serum was polyvalent, but he hoped the time would come when a serum of high antigenic value for any particular type of staphylococcal infection could be produced.

Dr. JOHN C. BELISARIO (Sydney) read a paper on

Mycological Infections

Vesicular eruptions on the feet and hands, he said, were very common in Sydney. There were several clinical types: (1) superficial vesicular and (2) deeper vesicular, both these being on the fingers, toes, palms of hands, and soles of feet; (3) localised type; (4) scaling or eczematoid type; (5) intertriginous type, remaining localised to the interdigital spaces; and (6) hyperkeratoid type. Many of the vesicular manifestations represented an allergic reaction of the tissues to toxins liberated from primary foci of infection. The numerous ætiological factors—seasons, exposure, foods, orthopædic abnormalities, and so forth—might all produce their effect by altering the reaction of the sweat. Normal sweat had an acid protecting cloak, but the sweat of the hands and feet was neutral or alkaline, owing to the absence of sebaceous glands and lack of evaporation. Alkaline sweat appeared to favour mycelial growth. Working on this hypothesis, lemon juice was tried; citric acid, apart from its effect on pH, also had a buffer action. The juice was used 4-5 times a day, in conjunction with liquor plumbi sub-acetate fort. and 1 per cent. hydrarg. ammon. dil. in a solution.

Irritation was dramatically relieved following this treatment, and the vesicles rapidly resolved. In the later stages, when eczema had supervened, ichthyol and salicylic applications were employed, supplemented if necessary by fractional doses of X rays. An infective focus must be eliminated to prevent recurrence. When the fungus element had died out, and sensitisation to external irritants remained, removal of toxic foci and autogenous vaccines might help. Intravenous calcium therapy and high colon lavage were also used with success in these types.

Dr. J. WITTON FLYNN (Sydney) said that epidermophyton was very common in Sydney, many cases being symptomless and ignored by the patient. Dressing sheds and gaols were places where the infection was easily spread. To check the disease the spread from one person to another must be prevented by keeping the feet covered and dry, and by dusting with a mild acid antiseptic powder. The floors of dressing sheds must also be kept as dry as possible. Reinfection could be prevented by treating the chronically inflamed toe-nails and correcting orthopædic faults. Whitfield's ointment was, in his experience, of little value.

Dr. S. W. SHIELDS (Melbourne) thought the disease more prevalent now owing to the increased amount of sport and to the popularity of trips to the tropics; moreover diagnosis was more accurate. The borrowing of towels in schools and camps was one of the common methods of infection. He had found Whitfield's ointment fairly satisfactory.

Dr. BUTLER (N.S.W.) said that at one time 90 per cent. of the military cadets at Duntroon had "Duntroon rot" between the toes. The use of lotio potassium permanganate before and after baths and boric acid between the toes produced good results, but where the nails were involved treatment was less effective.

The PRESIDENT thought that the variable results obtained with Whitfield's ointment might be explained by variation in its composition, and by the fact that some patients did not rub it in vigorously enough. Spiritous solutions of aniline dyes were well worth trying.

SECTION OF PHARMACOLOGY, THERAPEUTICS AND ANÆSTHESIA

Prof. SYDNEY SMITH presided at this section when Sir WILLIAM WILLCOX, on the

Use and Abuse of Hypnotic Drugs

He said that the advances in the study of hypnotics since 1913 included the discovery of many new derivatives of the barbituric acid series and the introduction of drugs other than alkaloids for basal anaesthesia. Insomnia was due either to psychological or organic causes and it was essential before commencing treatment to discover the cause. Hypnotics should be used only when absolutely necessary and when treatment by the usual general measures was unsuccessful. Patients taking hypnotics were likely to lose self-reliance and form the habit. Many operative cases did not require morphia or heroin, and as a routine they should not be administered post-operatively. Deaths from suppression of urine following their too free use were not uncommon. A dose of only 1/8 to 1/12 of a grain should be given, and repeated if necessary. The perfect hypnotic had

yet to be discovered. Sir William classified hypnotics into the following groups :—

Low toxicity group—e.g., bromides, alcohol, Phenazone, Pyramidon, phenacetin, aspirin.

Chloral and its associates.—Chloral was effective, safe, and rapid in action. Other drugs useful in this group were chloralamide, butyl chloral, chloralose, Chlorotone, paraldehyde (freely diluted) and Avertin. Avertin was used extensively as a basal anæsthetic. It sometimes produced toxic liver effects.

Urea group.—Adalin was very safe and very useful. It was best administered in a dose of 10 grains combined with a similar dose of aspirin.

Sulphone group.—Sulphonal and trional were examples; they were slow in action, uncertain, and toxic. Skin rashes and toxic symptoms were not uncommon following their use.

Barbituric acid group.—This group contained a great many preparations, whose toxicity depended on the molecular weight of the molecule combined with the barbituric acid; the heavier the molecular weight the greater the toxicity. They were quickly absorbed, certain, and very good in selected cases. Idiosyncrasy was not uncommon. Thyrotoxicosis, asthma and its related diseases, affections of the kidneys, liver, and adrenals rendered patients highly susceptible to barbiturates, and these should therefore be used only after such conditions had been excluded by thorough examination. Sir William cited cases of fatal suppression of urine and heart failure following Luminal. Repeated taking of normal doses could produce curious manifestations amongst which were diplopia, squint, visual hallucinations, ataxia, and degenerative changes of the central nervous system. These were frequently attributed to cerebral tumour or other intracranial diseases. Accumulation of effects occurred, but chemically no accumulation in the tissues could be detected even after long periods of administration. Tolerance was not established to barbiturates, but the habit of taking them could be formed. They caused amnesia, and in this way could be responsible for suicide; an actress had walked out of an open window following only a small dose of a barbiturate. In big doses these drugs not infrequently caused fatal pneumonia. Overdosage should be treated by bowel and gastric lavage, caffeine as a diuretic and drainage of cerebro-spinal fluid by lumbar or cisternal puncture. To cerebro-spinal fluid drainage many good results in treatment were attributed.

Alkaloidal hypnotics.—Morphia and heroin should not be used in the presence of hepatic or renal deficiency. In selected cases free but not prolonged use should be made of them, in adequate dosage. Apomorphine hypodermically was a good hypnotic in delirium tremens. It produced nausea followed by sleep.

Basal anæsthetics.—Amytal, Nembutal (grs. 5), Evipan, and others were useful but dangerous if idiosyncrasy existed. Sir William had seen a case of pneumonia after the administration of 3 grains of nembutal. In conclusion, he said that in prescribing a hypnotic or basal anæsthetic, one (or a combination) of the less toxic drugs should be selected. If a barbiturate were to be administered, the patient should be examined for the abnormalities likely to cause idiosyncrasy.

Prof. R. D. RUDOLF (Toronto) congratulated Sir William on his fair and moderate statement. He considered insomnia to be due either to increased irritability or increased irritation of the central

nervous system. Hypnotics acted mainly by lessening this irritability, but some actually relieved pain directly. Measures to lessen noise and worry were of the utmost importance, and should be undertaken before employing hypnotics. He agreed with Sir William that aspirin combined with a barbiturate was very effective.

Dr. F. DAVIES (Melbourne) asked whether barbiturates should be used in cases of pneumonia.

Dr. N. W. MARKWELL (Brisbane) said that chloral and bromide were the best hypnotics in pneumonia, especially for the post-febrile insomnia. For post-critical delirium chloroform anæsthesia and gastric lavage were used, but he gave 1 drachm of bromide hourly until sleep ensued. One patient had been given 1 ounce in 12 hours. He asked Sir William what was the best hypnotic in this condition. He pointed out that in coronary thrombosis large doses of morphia could be safely given. In cases of threatened nervous breakdown he used barbiturates in adequate dosage and stopped their use gradually.

Dr. D. G. REXTON (Melbourne) asked if a second dose of paraldehyde was less effective than the first, and whether barbiturates ever caused excitement. He gave his own experience of amnesia for 24 hours following 12 grains of sodium amytal administered in divided doses; in his own case morphia relieved pain but did not induce sleep. He confirmed the good effects of chloral and bromide.

Dr. W. SIMMONS (Sydney) asked what hypnotic Sir William recommended for the insomnia of pregnancy.

Dr. Z. MENNELL (London) said that he could not persuade Sir William to take a barbiturate for seasickness on the voyage out from England. Hedonal (not a barbiturate) was used frequently in Russia, where it was the cause of much pneumonia. He stressed the amnesia and the dangerous toxic symptoms produced by barbiturates in hypersensitive patients. Synergism played a large part and was well exemplified by the marked effect of small doses of morphia with barbiturates. Cerebro-spinal fluid drainage was of great value in treating toxic symptoms due to the barbiturates. Morphia was preferable to heroin because the former was less depressing to the respiratory centre. Depression to respiration by heroin was very marked when it was used in conjunction with evipan. Intravenous morphia was useful but great care was necessary.

Dr. B. L. STANTON (Melbourne) said there was an accumulation of effects following small doses of the barbiturates. This was evidenced by the marked effects produced by repeated small doses in the treatment of high blood pressure. The nervous irritability of children should be treated with small doses of barbiturates. He had treated a case of veronal poisoning with apomorphine, which did not produce vomiting but sent the patient into a deeper coma. This was evidence of synergism. The combination of codeine and aspirin was a good hypnotic and analgesic.

Dr. IVAN MAXWELL (Melbourne) said that ephedrine given in cases of asthma had often caused wakefulness, so he prescribed luminal or amytal as a sedative. Idiosyncrasy to small doses of aspirin was common in asthmatics, but no sensitivity to it was demonstrable in skin tests. He inquired whether luminal or bromide was preferable in the treatment of epilepsy.

Sir WILLIAM WILLCOX said that he did not recommend the use of barbiturates in pneumonia because no other drugs were so likely to cause broncho-pneumonia, and in addition they were not sufficiently powerful. For post-critical delirium he preferred hot packs and tepid sponges to drugs, which should only be used after physical measures had failed. He thought large doses of bromide were useful but would hesitate to use as much as 1 drachm hourly. However, the proof of the pudding was in the eating. He recommended that when barbiturates were required, well-known ones like veronal and Medinal should be prescribed. He agreed that a second dose of paraldehyde was not as effective as the first. Barbiturates often caused excitement. Morphia often relieved pain without inducing sleep, and sometimes caused excitement. The effects of the barbiturates were cumulative; a patient who had received 1 grain of luminal daily for one year had developed toxic jaundice. Veronal in usual doses took 2-3 days to be excreted. The barbiturates and morphia should not be used for the insomnia of pregnancy, since the effect of the hypnotic on the child had to be considered. It was best to adopt simple physical measures, and if hypnotics were required aspirin or alcohol should be administered.

Prof. W. A. OSBORNE (Melbourne) read a paper on a
Vasoconstrictor Principle in the Skin of the Frog (*Hyla Aurea*)

He said that when experimenting on a frog he happened to rub his eyes which immediately became very painful but not blood-shot. This chance observation led him to further experiments. He made an extract of the frog's skin which on injection constricted the peripheral arterioles, completely closing them. The heart stopped beating as a result of coronary spasm, and the blood pressure remained high. The experiment had been repeated and the result confirmed. He knew of no other drug which produced complete obliterative spasm of the arterioles. The effect of the extract was only slightly reduced by boiling. He suggested that this curious principle in the skin of the frog might some day find a clinical application.

Mr. JOHN TAIT (Melbourne) opened a discussion on
Urinary Antiseptics

He said that antiseptic drug treatment of infections of the pelvis of the kidney must be ineffective because the pelvis emptied so frequently. In determining what could be expected from drug treatment the basal pathology of the various urinary tract infections had to be considered. A great many infections were blood-borne. The gall-bladder had been the origin of the infection in one of his patients who had been cured of a chronic pyelitis by cholecystectomy. The majority of the infecting organisms came from the bowel. If they were not destroyed by the normal immunity mechanism they could cause urinary tract infections. Mental exhaustion was the main cause of impairment of the normal mechanism. Chronic pyelitis was a disease of professional people. A small number of cases of chronic pyelitis gave a history of bowel infections. There was great difficulty in curing these infections by drugs. Hexamine (urotropine) was the most useful. He quoted a case of chronic pyelitis who had been kept comfortable with hexamine for years. Hexamine should be given between meals when the gastric acidity was at its lowest. Hexyl resorcinol (Caprokol) was not more

efficacious than hexamine. Alkalisating the urine in cases of *B. coli* infections was often very effective. Some other *B. coli* infections were best treated by rendering the urine acid by a ketogenic diet and the administration of acid. In many cases a weekly alternation of the reaction of the urine was of great value.

Of the antiseptic dyes Pyridium and Neotropin were good and very penetrating. Flavine and mercurochrome applied locally were often effective in concentrations of 1 in 4000, but much higher ones could be used if the state of the kidney pelvis permitted. Intravenously these two drugs were not efficacious. A combination of methylene-blue and sandalwood oil was a good sedative antiseptic. It was desirable in addition to drug treatment to control the source of the infection, to build up the immunity response, and to promote a free flow of urine.

Mr. H. MORTENSEN (Melbourne) said the antiseptic properties of drugs depended on the form in which they were excreted in the urine. Some antiseptic drugs caused a beneficial effect by their diuretic action. Secondary infection was frequently the first sign of some lesion, such as calculus, of the urinary tract. The three types of urinary antiseptics were: those derived from plants, for example, buchu which probably acted by its diuretic effect; those having a direct antiseptic action; and those which altered the reaction of the urine. Hexamine and acriflavine were probably the best. Hexamine intravenously should be more often employed as a prophylactic after operative manipulation. Hexamine in a highly acid urine was most efficacious against *B. coli*. Ammonium chloride was better for acidifying the urine than was acid sodium phosphate, but it was irritating to the alimentary canal and might produce acidosis. N.A.B. was effective against coccal infections. When it was necessary to alkalisate the urine, large doses of potass. bicarb. or potass. citrate should be used. Beta-hydroxybutyric acid was the factor which inhibited *B. coli* in patients taking a ketogenic diet. A reaction of pH 5.2 to 4.6 was required in vitro. Twelve grammes of mandelic acid and 8 grammes of ammonium chloride daily were effective.

Dr. MAXWELL said that hexamine for its antiseptic action required a concentration of pH 5 and needed to be in contact with *B. coli* for six hours to destroy it. The pH was difficult to obtain clinically and it was almost impossible in cases of acute cystitis to keep the urine in the bladder for several hours. Similarly in pyelitis, contact with the antiseptic was not sufficiently long. Hexamine in cases of retained catheter did not prevent infection.

Sir WILLIAM WILLCOX agreed with the remarks of Mr. Tait and Mr. Mortensen. Changes of antiseptics were beneficial. One drachm of potassium citrate 3-4 times daily for 3-4 days at intervals of 3-4 days was useful. Metromene (methylene-blue and hexamine) was used a lot in England apparently with good results. An autogenous vaccine was of value in treatment and also vitamins A and D in building up immunity. Hexamine salicylate (Cylotropin) intravenously was effective in acute toxæmic conditions arising from the urinary tract.

Mr. MORTENSEN, replying to Dr. Maxwell, said he preferred catheterising a patient 2-3 times daily to having an indwelling catheter. He agreed with Sir William concerning the beneficial effects of cylotropin.

MALARIA IN CEYLON

MUCH that has been written about the epidemic of malaria in Ceylon is inaccurate or misleading; but with the publication of reports¹ by Colonel C. A. Gill and Dr. Rupert Briercliffe we now have an official account of it. Dr. Briercliffe is director of medical and sanitary services in the island; Colonel Gill, formerly chief malaria medical officer and director of public health, Punjab, was appointed as expert adviser on malaria by the Ceylon Government during the epidemic. The former states that his report is concerned chiefly with facts and figures, while the latter reviews the facts and defines the policy that should be followed by the Government of Ceylon in the future. From these reports we learn that the epidemic is the greatest pestilence in the recorded history of the island. In seven months it destroyed 80,000 lives, and indirectly it caused incalculable misery and distress; for it interrupted trade and business, paralysed village life, and led to an almost complete cessation of agricultural operations for a long period with consequent dire privation and starvation.

Although there had been previous epidemics on a large scale, and although two-thirds of the island—the north, east, and south-east parts of Ceylon—once densely populated, are now so malarial that they contain only about 4 per cent. of the population, this outburst came as a bolt from the blue. In the last week of October and first week of November, it appeared as an "explosive outbreak" in an area of about 5800 square miles. The peak of the epidemic as judged by sickness was in the middle of December, 1934, and as judged by mortality in the middle of January, 1935; from then it slowly declined except for a small rise in May and June. At the height of the epidemic there were 60,000 attendances a day at the government institutions in the affected area, and by the end of April 1½ million cases. Curiously enough this epidemic area was situated between the intensely malarial area in the north, and an area in the south-west, where there is little malaria normally, and which even during this epidemic was little affected.

Part of Colonel Gill's report is occupied by a discussion of the cause of the epidemic. He considers an epidemic "was due, if not overdue." He acknowledges very properly the valuable work during the past 12 years by Mr. H. F. Carter, medical entomologist, who had incriminated *Anopheles culicifacies* as the chief, if not the only important carrier of malaria in Ceylon, and who provided him with full information on the bionomics of the 18 species of anopheles in the island. *Culicifacies* breeds in rock and sandy pools in the beds of rivers, but it is also found in many other situations, like wells, borrow pits, quarries, drains, pools, and sheets of water formed during the rains. In most years the rains flush the rivers and sweep away the larvæ, but during droughts the larvæ are undisturbed and hatch out in enormous numbers; hence the association of malaria with rivers in Ceylon which has long been recognised. Colonel Gill sounds a warning that mosquito control in the river-beds alone is not likely to be successful.

The permanently malarial north, east, and south-east parts of Ceylon receive rain from the north-east monsoon in October, November, and December; in these there is a single malaria wave with a broad

peak in January, February, and March, and a slow descent to its minimum in June. In most of this area the rainfall is below 40 in. per annum and it is called the "dry zone." The remainder of Ceylon receives an average annual rainfall of more than 100 in., in places 200 in. In this "wet zone" are areas almost free from malaria; and others which, subject to moderate malaria, suffer most from the great epidemics. In the wet zone, a malaria wave appears twice a year; in January after the north-east monsoon; and in June, July, and August, after the south-west monsoon. Yet although the wet zone is subjected to two malaria waves in the year, the spleen-rate there is from 0-10 per cent. compared with 40-60 per cent. and over in the dry zone, and 10-40 per cent. in the intermediate area which suffered most during the recent epidemic. In all parts of Ceylon, except the central mountain region, temperature and humidity even during prolonged droughts remain favourable to the transmission of malaria by the insect carrier.

Colonel Gill discusses the distribution of the malaria and the epidemiology; but despite certain correlations between rainfall and malaria, and full entomological data, "the entomological theory does not appear competent to explain the whole phenomenon presented by the epidemic and the intriguing paradox therefore remains that malaria epidemics in tropical Ceylon are determined by drought, whilst in sub-tropical India they follow excessive rainfall." An attempt is made to explain the paradox, by suggesting a periodicity of the parasite, "possibly the quality variously referred to as 'the unknown influence', the 'X factor' of Pettenkofer, 'the epidemic potential' and 'the general determining cause' of modern epidemiologists. Whatever may be its nature, the predominant attribute attaching to periodicity is the variable amplitude of its range." If other conditions are not favourable even this universal "influence" cannot produce an epidemic. And so in spite of a highly congested population containing a high percentage of susceptible children, in spite of the presence of drought, in spite of special hardships from economic conditions, and in spite of the presence of river-beds, the "influence" had little effect in the south-west area of the island, where the carrier insect, although present was not widely prevalent. Nor had the "influence" much effect on the permanently higher malarial area.

SYMPTOMS AND TREATMENT

On the clinical side the predominating parasite is reported as *Plasmodium vivax*; but there is some doubt whether the microscopic work in many hospitals was accurate. A special study of 647 cases showed that besides the common type of fever, there were cerebral cases, algid cases, diarrhoeal and dysenteric types, œdematous types, and malaria complicating pregnancy often with disastrous results. In the treatment of malaria during pregnancy Dr. G. A. W. Wickramasuriya considered that "far from being an oxytocic, quinine administered in effective therapeutic doses, by rapidly controlling the malarial infection and the high temperature, prevents premature interruptions of pregnancy and intra-uterine foetal death," and his views have been generally confirmed by other medical officers. The association of ankylostomiasis, or malnutrition, with malaria was regarded as the cause of the partial or generalised œdema which occurred in a large number of cases in the later stages of the epidemic, chiefly among children.

Atebrin and Atebrin mussonate were used in

¹ Report by Director of Medical and Sanitary Services (sessional paper XXII.), with supplement containing maps and charts; and Report by Colonel Gill (sessional paper XXIII.), Published in September, 1935, and obtainable from the Government Record Office, Colombo, at Rs.4.50 and Rs.3.0 respectively.

hospitals, but were not considered suitable for use at dispensaries and in the field owing to their toxic effects. Comparing atabrin and quinine an appendix to Dr. Brierecliffe's report states:—

"Deaths.—Among 681 patients treated with atabrin mussonate 17 or 2.5 per cent. died and among 424 treated with quinine 6 or 1.4 per cent. died. Four of the 17 deaths following atabrin mussonate were attributed to the toxic effect of the drug. If these four cases are excluded, the natural death-rate among the atabrin treated cases would have been 1.9 per cent., which is not significantly greater than the death-rate for the quinine treated series."

Discussing the toxic effects and the sudden deaths after atabrin injections, the appendix states that—

"among adults, pregnant women have been found particularly liable to collapse after injections. Convulsions due to malaria were of frequent occurrence among children in the early stages of the epidemic. Convulsions occurring a few minutes or hours after an atabrin injection and attributed by the medical officer concerned to the atabrin injection have occurred in both children and adults. They were always fatal."

PROPOSALS FOR THE FUTURE

In Part II. of his report, on the Control of Malaria in Ceylon, Colonel Gill discusses the scientific problem under the headings, the mosquito factor, the parasite factor, and the human factor, and summarises this by saying endemic malaria in Ceylon presents no novel or remarkable features. Although these epidemics have hitherto been regarded as uncontrollable, there is now reason to believe that their emergence can be prevented if measures are taken that will reduce the spleen-rate and the anopheline-rate (*A. culicifacies*) to the level of these factors in the south-west healthy area. This will take time, but can be accomplished if medical science provides the technical knowledge, Government the machinery, and public opinion the motive power. Government having decided that the population is sufficiently advanced politically to control its own internal administration, the success of the scheme will depend on the actual coöperation of the people. Colonel Gill reminds them that so far only a few antimalarial schemes had been begun in Ceylon, and had achieved only a certain measure of success—not from any fault in the schemes, but from lack of popular interest resulting in a lack of funds to complete or maintain them. The recent epidemic, however, has produced a profound change in public opinion.

No attempt is made to frame an antimalarial scheme for adoption in each individual area. Colonel Gill recommends generous provision of hospital facilities and that apothecaries and dispensers in the Government and estate hospitals and dispensaries be replaced by registered medical practitioners provided with microscopes, so that diagnosis and treatment may be more accurate; this is to control the parasite factor in man. Malaria control schemes should be undertaken in urban, rural, and estate areas; by land drainage, irrigation and development schemes, and river training operations. He deprecates colonisation schemes which involve the introduction of non-immune settlers into hyperendemic areas; and he considers antimalarial measures in such areas will not be effective unless accompanied by measures designed to promote rural betterment by increasing the food-supply and relieving economic distress.

The recommendations include establishment of a Sanitary Works Board, with the Minister of Local Government as president, and an equal number of official and unofficial members. It is also advised that an Anti-Mosquito Ordinance be passed. A proposal had been made to erect a Malaria Research

Institute in commemoration of the Jubilee; Colonel Gill recommends that a malaria department be accommodated in a wing of a main institute. He states his proposals will cost money; "good health, including freedom from malaria, is a purchasable commodity, but it is doubtful whether it is worth having as a free gift." Financially stricken as the island has been by the world depression and the great epidemic of malaria, the Government and people of Ceylon have now the anxious task of deciding how the maximum benefit is to be obtained from the minimum expenditure; which of Colonel Gill's recommendations are to be carried out now and which postponed; for Colonel Gill says "of this 'balanced scheme' that 'many parts indeed can be postponed or omitted without destroying its general structure.'"

THE CONGRESS OF DERMATOLOGY

(FROM OUR BUDAPEST CORRESPONDENT)

THE Ninth International Congress of Dermatology and Syphilology has been memorable both for its unprecedented size and for its scope. Dermatology, it was apparent, ranges widely through the whole field of medicine; and without attempting to summarise the hundreds of addresses delivered I will endeavour to convey something of the catholic outlook they revealed.

VENEREAL DISEASES

During the first few days venereal disease was considered from the international standpoint. It was accepted as a fact that syphilis and gonorrhoea could be made extinct throughout the world within a single year if all who suffer from them would have themselves fully treated. Starting from this principle the Congress proposed the application of legal penalties and the State control of treatment, together with the regulation of prostitution. From this it passed on to discuss some of the social questions arising in the practice of dermatology and venereology, including out-patient dispensaries, sick clubs, beauty specialists, barbers, masseurs, and quacks. Prof. KERL (Vienna), in an address lasting several hours, pointed out that while specialists in dermatology and venereal diseases keep strictly to their own territory, practitioners in adjacent fields press ever harder on their confines; indeed, it is often suggested that the treatment of syphilis is rather the business of the internist and the neurologist than of the venereologist! Kerl's idea is that the latter must gain exact knowledge of the borderland of his subject—even if it means adding a couple of years to his training—and that when he has such knowledge even neurosyphilitic affections should come within his province.

ALMQUIST (Stockholm) early created a sensation by proposing that the present division of syphilis into three stages should be abandoned; by means of many histological preparations he demonstrated that this infection, at all stages and in all places, will always produce what is essentially the same lesion. This view was accepted by many other pathologists present but on the whole was considered unproven. GRUNBERG, who has been studying the nature of the Wassermann reaction, reported that he has obtained positive tests from healthy animals treated with "spirochaete lipoids," whereas previous treatment with non-specific "organ lipoids" did not yield the same results. SCHERESCHWITZKY (Paris) made known his successes in the treatment of syphilis

in animals by means of a quinine preparation of his own, but it was felt that further evidence of its efficacy was required. Also in the discussions on syphilis an interesting dispute arose between ARZT and KERL, both leading clinicians of Vienna, about the importance to be attached to early changes in the cerebro-spinal fluid. ARZT looks on these changes as an indication for treatment with malaria, whereas KERL upholds the conventional view that they are mostly transitory. PINARD (Paris) took the view that fever therapy is desirable in syphilis (1) if the blood-serum is obstinately positive, or (2) if there is a positive Wassermann reaction of the cerebro-spinal fluid or other evidence of neurosyphilis. If the blood Wassermann cannot be made negative he prefers sulphur; in neurosyphilis and G.P.I. he uses malaria, or sulphur if it fails. LUDWIG WINKLER (Oradea, Rumania) drew attention to his priority as advocate of sulphur therapy in neurosyphilis, and spoke of its value in cardiovascular and arthritic syphilis as well. He also referred to the importance of estimating the erythrocyte sedimentation-rate as a control of cure of syphilitic infection. HILGERMAN (Landsberg) and SPITZER (Vienna) gave an account of their method of inoculation with a spirochæte vaccine, which they believe makes the organisms of syphilis accessible to chemotherapy.

The five largest American clinics reported their experience of cardiovascular syphilis; it appeared that in 6253 cases of syphilis—treated early, late, satisfactorily, unsatisfactorily, or not at all—the percentage of cardiovascular complications was 9.9; while in the smaller group, comprising only those which had not been treated early enough, it was 23 per cent. The Americans are the champions of uninterrupted treatment at all stages of syphilis.

Gonorrhœa did not receive as much attention as sometimes. Austrian and German members of the Congress expressed doubt about the value of the serological reaction, which they considered very problematical; VERESS (Cluj) thought it unduly optimistic to use this reaction as a criterion for treatment. As regards actual remedies no advance worth mentioning seems to have been made during the past few years. The horse serum injections proposed by Szilvassy have proved useless in GUSZMANN'S hands, and all the speakers seemed to agree that vaccines are valueless in the acute stage, while their action on complications is probably not specific. Of new preparations methylene-blue and acridine dyes seem to be the only ones which represent an improvement. Goldberger's abortive cure with Trypaflavine was received very dubiously, and some rejected it altogether.

SKIN DISEASE AND THE BODY AS A WHOLE

With the object of increasing the international solidarity of dermatologists a number of committees were appointed to go into such problems as cutaneous tuberculosis, industrial and other environmental affections of the skin, and the classification and nomenclature of skin disease. This last committee, under the leadership of Howard Fox of New York, is faced with a difficult task of reconciling many different attitudes; it has to bear in mind the different effects of identical causes and the identical effects of different causes, the individuality of the patient, the transitory nature of symptoms, the varying virulence of maladies, and the accumulation of diverse processes. In the present state of knowledge no system of eternal validity can be laid down, but one can imagine a working classification which would adapt itself to the advance of knowledge.

DARIER (Paris), MAYR (Munster), and STEIN (Vienna) spoke of the importance of the skin as an organ, especially in relation to diuresis and dys-hidrosis. Too much attention, they feel, has been given to the heat-regulating function of the skin and not enough to the excretory. It is significant that in pemphigus, for example, the quantity of urine passed decreases to a minimum, simply because of the excessive external loss of fluid. With the fluid goes sodium chloride, and the chloride excretion in the urine is reduced—an effect which may easily give rise to a mistaken impression that renal function is impaired. Means of testing the normality or abnormality of the skin as an organ are provided by the injection of such drugs as atropine and pilocarpine, which respectively promote and decrease sweating but have no influence on a sick skin. Caffeine doubles perspiration under normal circumstances but again may have no action when cutaneous function is already damaged. Such tests can be performed with delicate and complicated but reliable instruments. Stein also spoke of the elimination of toxins through the skin: the old exponents of humoral pathology used to maintain that all skin diseases were due to poisonous substances inside the body, and though this is an exaggeration many such diseases are really connected with puberty, pregnancy, and the menopause, and presumably with poisonous substances produced in these states. Juvenile acne, for instance, begins in puberty and is seldom seen after 40 years of age, and Stein has made the interesting observation that it occurs (almost without exception) in children who are precociously mature, and never, on the other hand, in eunuchs. Is it any wonder that another lecturer should urge the necessity for exact endocrinological tests in cases of obstinate skin disease?

Much was said about the action of vitamins on the skin, and several speakers assumed that they have a preventive or curative action; a Hague professor, for example, reported good results from the use of vitamin-rich raw foods in conditions such as psoriasis and eczema. The importance of dietetic treatment in skin diseases where the patient suffers also from digestive disorders was fully recognised. Due consideration again was given to the rôle of focal infections.

LEVADITI (Paris), NICOLAU (Bucharest), and others introduced the important subject of the filtrable viruses, and spoke of the proof that lymphogranuloma inguinale is due to a virus and can be recognised with the Frey antigen. URBACH and WOLFRAM reported that pemphigus vulgaris and dermatitis herpetiformis are likewise due to a virus, while NEUBER (Debrecen) stated that rhinoscleroma is caused by a capsulated bacillus—findings which will be of great interest provided that they can be corroborated. MANNSHEIMER (Essen) brought forward statistics supporting the Russian view that lupus in its ætiology has nothing to do with pulmonary tuberculosis. He denies that phthisical patients are particularly liable to contract lupus; indeed, he finds that their illness tends more towards recovery when they do so. Also speaking on lupus, ATKEN (Edinburgh) said that among 270–280 cases he had found that about half followed tuberculous infection of glands of the neck. It was very important, he said, that practitioners should recognise the great value of ultra-violet irradiation for tuberculous adenitis.

Elsewhere the Congress provided evidence of a reaction against methods of irradiation in dermatology; it was evidently felt that these have been

carried to excess. FRANCIS POLLER has not found short and ultra-short wave therapy particularly valuable; physicians from the United States quoted cases which suggest that diathermy is just as efficacious.

To sum up, although this Ninth Congress brought no great new discovery it has cleared up many problems of diagnosis and treatment and brought out new principles and objectives. Apart from skin diseases caused by external infections, it seems that the time is not far distant when the use of ointments in dermatology will be almost extinct. What has become chiefly important, for efficient diagnosis and for efficient treatment, is a knowledge not of the changes discovered but of their underlying causes.

LONDON WATER SOME PRESENT-DAY PROBLEMS

Colonel Harold's first report¹ as Director of Water Examination to the Metropolitan Water Board is full of interest, for, as he says, he came from the comparative quiet of a peace-time army into the heart of the Board's operations at a time of national emergency arising from two years' drought when it became necessary to consider matters of high policy. London was, however, saved from anything more than anxiety and inconvenience owing to the huge storage systems built up in accordance with the wise policy of his predecessor; and the danger being over Colonel Harold feels free to poke a little fun at the Londoner who talks about a condition of drought when he has sufficient water for all purposes, including a daily long bath. He compares it with the water shortage of an Eastern war-time cantonment, where the daily issue resolved itself into a petrol drum of water, derived from brackish underground sources, receiving the unpurified road washings of an unpaved Eastern town. But the shortage of water in London, such as it was, led to the relaxation of a provision in the Thames Conservancy Act of 1932 that every day 170 million gallons of water must pass over Teddington Weir. This eased the situation, but the reduced flow of the river must have reacted on the condition of the tidal reaches if only to a small extent. At Barking sewage carried upstream by the tide gave rise to many complaints from those using piers and boats. The total volume of water in the Thames between Barking Creek and Teddington Weir amounts at low tide only to some 8000 million gallons and the average content is 15,700 gallons, while the incoming water each tide is about double the low tide figure. The minimum statutory flow of fresh water over Teddington Weir of 170 million gallons per day obviously bears to the average volume mentioned the ratio of 170 to 15,700 or 1 to 93. A reduction of 30 million gallons per day in the statutory flow would change this ratio of fresh to tidal water to 1 to 113, a change which could have little adverse effect on the Pool of London. Also it should not be overlooked that some of the extra water abstracted from the river must ultimately reach the sewers and dilute the effluent which is passed into the Thames.

TASTE TROUBLES

Apart from this special source of complaint London consumers found little to grumble about last year. The complaints reaching the offices of the Board

numbered no more than one three-thousandth of a per cent. of population served. Only half of these were complaints about taste, and again only half were accepted as valid after investigation. Strictly speaking the responsibility at law of the Water Board terminates at its mains—no small liability in itself for there are 7760 miles of them. But in practice all complaints are investigated on account of the light which they may throw on adventitious pollution. During the year definite pollution was twice traced to cross connexions of piping in important buildings. Generally speaking, Colonel Harold says, most of the complaints arise from local causes beyond the mains. The tank room offers great attractions as a playground on wet days and the household storage system is a fertile source of pollution. In one case, where a complaint was made that tap water was unfit for dispensing, inquiry revealed an aggregation of lead, shavings, and oakum left in the pipe by the plumber. Evidently every consumer should demand of his landlord a tap direct off the main for drinking purposes. In periods of high atmospheric temperature complaints of a disinfectant taste were sometimes received and later of an earthy taste at the time when a profuse growth of algae dies on the filter beds. But, all in all, London water is no mean beverage, and its palatability may be largely attributed to its moderate hardness. During the year a committee of residents in West Wickham, after wide investigation, concluded that whilst it would be possible for their water to be softened, that would on balance be no advantage to the community.

OZONE OR CHLORINE

But the scientific interest of the present report is greatest in the big issue which will soon have to be decided as to the choice of the final disinfecting agent in water purification. The drought brought to light defects in the filtration system as a result of which chlorine and ammonia points have been installed in many places as an additional safeguard. The continuous flow of water through storage systems results in an enormous reduction of the bacterial and organic content of the water. Next comes an efficient filter barrier, and finally a chemical process which needs time for effective action either in contact tanks or in the mains before the draw off. The aim of successful water practice is to supply a worked-out weathered water with a composition like the unpolluted natural water, and in contradistinction to campaigning measures chemicals are used only as a finishing process and as a corrective to counter an emergency. The importance of such an invulnerable barrier is illustrated by an incident at Milwaukee in 1916, when the chlorine was accidentally shut off for several hours and the water was badly polluted for one day. The result of this was 25,000 to 100,000 cases of diarrhoea followed by about 500 cases of typhoid fever with 60 deaths. The choice of final process for London water rests between ozone and chlorine—or rather combinations of chlorine and ammonia, for free chlorine is no longer used. Ozone imparts an excellent finish to water and removes the majority of disagreeable tastes. When it has done its work it leaves nothing behind but oxygen. A water cannot be overdosed with ozone, since the gas is ultimately dissipated. Ozone is increasingly popular in France and has been tried out at one of the Board's works at Barn Elms. But whereas chloramine continues to function as an efficient germicide under the worst possible conditions, ozone requires a filtrate of fairly uniform quality. On the other hand, with ozone the contact period

¹Metropolitan Water Board. 29th Annual Report by Lt.-Col. C. H. Harold, O.B.E., M.D., D.P.H. London: P. S. King and Son. 10s. 6d.

need be only a few minutes, in contrast with the one and a half to two hours contact required in the tank after a standard dose of ammonia and chlorine. But then again the longer contact period may provide, and not infrequently does, a completely sterile water. There is a further suggestion, which requires careful examination, that ozonised water after exhaustion of the ozone becomes more susceptible to bacterial growth. Colonel Harold sums up the situation thus. From the consumer's point of view, ozone presents the greater attraction, and if properly applied is an effective sterilant, provided that at all times an absence of breaches in the filter barrier can be guaranteed. On the other hand, chloramine offers an all-round security under every possible condition and is the safety-first of waterworks practice.

AMERICAN PUBLIC HEALTH ASSOCIATION

(FROM AN OCCASIONAL CORRESPONDENT)

MORE than two thousand fellows, members, and guests of this association were registered at the annual meeting held at Milwaukee, Wisconsin, from Oct. 7th to 10th. This is the largest attendance recorded since a registration fee was inaugurated.

Poliomyelitis

The summer epidemic of poliomyelitis and the resulting popular excitement had their effect upon the programme. The governing council voted the creation of a special committee to confer with the U.S. public health service and to announce to the press and to the public whenever it may be necessary such dicta regarding the administrative control of poliomyelitis as may be calculated to allay panic and quiet or prevent unreasonable agitation. As to whether there is any knowledge to disseminate a difference of opinion was expressed. The epidemiologists state that we know at least as much about poliomyelitis as about scarlet fever. An experienced health officer retorts by saying that if every health officer died to-morrow there would be neither more nor less poliomyelitis as a result. Dr. James P. Leake, senior surgeon U.S. public health service, made an effective plea for the reporting of paralysis whenever it occurs. In North Carolina, where this year's epidemic began (in April), 90 per cent. of the cases reported were paralytic. This is a quite unusually high proportion. In New York, where there was an excess incidence though hardly an epidemic, 55 per cent. of the cases were paralytic.

This summer gave occasion for the trial on a fairly large scale of the vaccines prepared by Dr. Kolmer and Dr. Brodie. Dr. Kolmer's vaccine is a living attenuated virus. It was given to some 12,000 persons, nine of whom subsequently developed poliomyelitis, eight of them with paralysis. Dr. Kolmer is convinced that in each case the disease was in the stage of incubation and developed because the vaccine was given too late to produce immunity. His critics, however, are not satisfied that there was no causal relationship between vaccination and pathogenesis. They refuse to regard the living vaccine as safe. Dr. Brodie's vaccine prepared in the laboratories of the New York City department of health is a killed vaccine. It has been given to 8000 persons and one only has developed poliomyelitis. The vaccine given in this one case had received three times the treatment needed to make

it non-infectious to monkeys and had in addition been shipped from New York to the west coast. The disease developed well within the period of incubation from the date of known exposure. Critics accept the safety of Dr. Brodie's vaccine, but consider further experience necessary to prove its efficacy. So indeed does Dr. Brodie, who is refusing to supply his vaccine except for properly controlled experimentation.

Whooping-cough

Dr. Louis W. Sauer reported on results obtained with his pertussis vaccine which is now being used extensively by physicians in this country. Dr. Sauer sees no evidence that pertussis vaccine has therapeutic value. However, with vaccine prepared and administered in the Evanston Hospital he had had complete success in prophylaxis. With "authorised" commercial vaccine the success has been less complete as is shown in the following Table.

Three-year Report on Pertussis Immunisation

Authorised commercial vaccine (Sauer) 8 c.cm.	Injected.	Exposed		Failures.
		family.	outside.	
Private	475	30	28	5
Health Department .	612	13	50	4
Two orphanages ..	242	23	—	1
Cradle (illegit. infants)	187	—	—	—
—	1516	144	—	10

Unsolicited reports have been received from 58 physicians in 22 different States, the total figures given being 6455 patients injected, 476 exposed, and 81 failures. The high proportion of failures to exposures and the low proportion of exposures to injected are explained on the ground that many of these physicians had no means of knowing of exposures except in such cases as subsequently developed the disease.

Every attempt has been made to ensure that the "authorised" commercial vaccine shall be prepared by exactly the same methods as those used in Dr. Sauer's laboratory in Evanston. Three possible causes of failure were discussed: (1) The warming of the vaccine. At the Evanston Hospital this is not allowed to take place at any time between preparation and administration. In distribution of commercial vaccine over the country uninterrupted refrigeration has not been practicable. (2) Age of administration. Seven out of ten failures occurred in children over 3 years of age. As a result of this observation Dr. Sauer is now recommending that children over 3 years receive a total dose of not less than 10 c.cm. (3) Use of recently isolated strains. In preparation of commercial vaccines there may be difficulty in obtaining recently isolated strains. Microphotographs were displayed showing the marked changes in morphology undergone by *B. pertussis* in culture.

Mental Hygiene

Dr. Elizabeth I. Adamson, of the department of psychiatry, Columbia University, made a strong point for the inclusion of this subject in official public health programmes when she pointed out that psychogenic illness, like tuberculosis, is mainly acquired in childhood and is a family disease communicated by prolonged and repeated exposure. Prof. Grant Fleming, of McGill University, while

accepting the wisdom of proceeding slowly in making additions to the official health programme, encouraged voluntary organisations to blaze the trail and described how existing institutions in Canada might be used as centres around which provincial mental hygiene organisations can be created.

Lay Administrators

In the report of the committee on professional education, the following passages gave rise to much comment and some criticism:

In practice in the United States there have been in the past many non-medical health officers, some of whom have served with such distinction as to demonstrate conclusively that a suitably educated individual, not a doctor of medicine, can administer a health department efficiently and well.

While there are many positions in the field of public health which can well or best be filled by workers well educated in the theory and practice of public health but not possessing a medical degree, the position of administrative health officer, whether of state, city or county, demands in general the possession of medical as well as public health training. We do not recommend the discontinuance of courses in public health for the education of non-medical persons, but the committee believes that such persons should be informed before entering on a course that their probable field of activity will be curtailed by the absence of a medical degree, and that their chances of succeeding to an important administrative position in the field of public health are not bright. Young men and women intending to enter the field of administrative public health should be advised to secure a medical degree, specialising as much as possible during the medical course in the various fields of preventive medicine, and adding the special course in public health at the end of the usual hospital internship. It is from such a group that most may be expected in the coming years.

The remarkable personality and teaching ability of the late Prof. Sedgwick is responsible for a group of highly successful lay public health administrators. It is still uncertain and perhaps will for some years remain uncertain to what extent the non-medical public health officer can win a place for himself in public health administration in this country. Should he choose to specialise in social welfare as well as in public health there is a distinct possibility that his prospects may be brighter than this report would indicate.

The new president-elect is Dr. Thomas Parran, Jun., health commissioner of New York State, the president being Dr. Walter H. Brown, professor of hygiene at Stanford University. New Orleans was selected as the convention city for 1936.

MEDICINE AND THE LAW

Damages for Shortened Life

In *Rose v. Ford*, which came before the Court of Appeal last month, further light was thrown on the change in the law whereby a right to damages for negligence can now survive for the benefit of a dead person's estate. This class of case is of interest as showing the attitude of the courts to the assessment of damages for shortened expectation of life and similar questions. At Birmingham Assizes Mr. Justice Travers Humphreys had to consider the case of a girl who, as the result of a motorist's negligence, was injured fatally. Soon after the accident her leg was amputated; two days after the amputation she died. The judge had awarded to her repre-

sentatives £500 for her pain and suffering and for the loss of the limb, and £500 for the more remote damage she would have suffered in going through life as a woman with only one leg. The Court of Appeal cut down the first £500 to £20, and the second £500 to 40s. The girl had lost her leg only two days before she died and the judges held that the nominal sum of 40s. would be enough for those 48 hours. The judge at assizes was apparently wrong in thinking that the girl's estate could recover damages on the basis of a normal expectancy of life after the amputation.

"Punch-drunk" Boxer's Plea of Insanity

In an application to the Court of Criminal Appeal (in *R. v. Bousquet*, Oct. 14th) Sir Henry Curtis Bennett, K.C., urged that his client, a professional boxer, had been insane at the time of the alleged murder owing to his being "punch-drunk"—i.e., mentally affected by the blows and bruises he had received in the course of his career as a heavy-weight fighter. A witness at the trial had said that a "punch-drunk" boxer would not know what he was about. It was suggested that Bousquet had not been normal since last February, and that his condition had been getting steadily worse. His letters and statements were damaging evidence of guilty intent; the defence contended that they were delusions. The Lord Chief Justice delivered the judgment of the court which rejected the application. Dr. Grierson, a medical officer of long experience in the prison service, had said that there was no evidence of insanity. Lord Hewart enumerated the three points which the accused had to establish: (1) that he suffered from a disease of the mind; (2) that because of such disease he suffered from a defect of reason; and (3) that, in killing his victim, he did not know the nature and quality of his act—as if, for instance, he thought he was merely peeling an apple when he was actually cutting someone's throat. The defence had failed to establish these points and the failure was final.

The Use of Films as Criminal Records

Two days after the decision in *Hauptmann's* case at Trenton in New Jersey (set out in this column last week), an Inter-State conference on crime prevention was held in the same building. It was specially concerned to remove obstacles due to the separate and independent jurisdictions of the several States of America. If a gunman commits a murder and can slip over the border into an adjoining State, he will probably escape the consequences of his crime. The conference decided that the States would make compacts with one another for the surrender of criminals, the summoning of witnesses, and the checking of prisoners released on parole; in effect, the State boundaries would cease to exist. The conference also recommended the adoption of universal finger-printing throughout all the States and the provision of facilities for interchange of criminal records. One other resolution reveals an interesting element of psychology. It advocated the trial and use of "sound moving pictures" in the identification of criminals. The New Jersey suggestion is that a film be taken of persons convicted of serious crimes. The man will be shown moving along a platform and standing against a chart of Bertillon measurements. At present detectives see him under these conditions on conviction, but a film record would refresh their memory in later years and might be exhibited in

public cinemas when the man, as sometimes happens, is "wanted" for another serious offence after his release from serving his sentence for an earlier crime.

Nor is this all. It is said to be the experience of the police that a criminal, when caught, will sometimes volunteer a frank confession to assist the cause of justice or to relieve his own conscience, yet will afterwards repudiate his confession or will falsely allege that it was extracted from him by "third-degree" methods. The New Jersey police have the idea of using the sound-recording film, along with the ordinary cinematograph film, to record the confession at the moment when the criminal is in the mood to tell his story. If the record can show him making his statement voluntarily, deliberately, and at his ease, if it can show the police giving him a proper caution and warning him that his statement may be used against him, and that he must expect no advantage from it, then it may some day be available to negative a sudden and unsupported allegation that the man was "beaten up" or unfairly forced to confess. It may be doubtful whether we shall adopt this idea in England, but the proposal is interesting. The recent Inter-State Conference at Trenton indicates that Americans are at last being stirred to some active step to put down crime. The proposed system of Inter-State compacts to avoid awkwardness on State boundaries will recall the compacts sometimes made in England between local authorities to avoid unfortunate incidents on their boundaries in connexion with motor-ambulances and traffic victims. In America the question of crime in relation to State boundaries could best be solved by Federal legislation. This, however, might require a new amendment of the United States Constitution, and at the present moment Federal intervention in State matters is far from popular.

MEDICAL USES OF RADIUM

THE research centres throughout the country to which radium has been lent by the Medical Research Council submit reports this year¹ showing good progress and evidence that much thought is being given to improvements in technique. We select from the reports some items of special interest.

Cancer of the Breast.—The surgical unit of St. Bartholomew's Hospital makes an interesting statement concerning the comparative results of surgical operation and radium implants in the treatment of breast cancer. Examination of the five-year survival rates obtained by very careful follow-up shows that the results for the two methods of treatment are not materially different, being in each case 40 per cent. Since the new form of treatment did not prove superior to the old, it was decided to attempt improvement by combining interstitial radium with surgery, the breast being first implanted with radium needles and subsequently excised. It is hoped that by this autumn a special histological study of 50 cases treated by this method will have been completed, and the next report will contain an account of these. Birmingham General Hospital, where many breast cases are treated radiologically, the Marie Curie Hospital and the Middlesex Hospital all mention the use of X ray therapy either to supplement or to replace radium, suggesting that all are finding here a satisfactory line of advance.

Cancer of the Uterine Cervix.—Figures are now available of over 1000 cases of cancer of the cervix treated more than five years ago, and some interesting comparisons are possible. Presumably in future years survival tables will be supplied such as have recently been recommended by the League of Nations Health Organisation as a result of the inquiry made by a committee of experts under the chairmanship of Prof. James Heyman.² Tables of this sort are now prepared by nearly all research centres.

Of all types of cancer treated by radium the results are most consistent in cancer of the cervix, and although certain figures are still outstanding there is a suggestion, in the tables for the last three years, of a general improvement.

Cancer of the Uterine Body.—Most centres mention that hysterectomy remains the method of choice for early cases. It seems possible, however, that in the future a combined treatment by radium and X ray may replace surgery except in very favourable cases.

Oral Cancer.—This section includes reports from two hospitals where one-gramme units are in operation. The Middlesex Hospital states, "The tele-radium unit has continued to prove its usefulness. . . . Quite apart from the curative value, which cannot be assessed until after a period of years has elapsed, it is a method of therapy which is more convenient and associated with less danger to the staff than is the case when large moulded applicators are used." University College Hospital point out the difficulty of so arranging the ports of entry that an adequate tumour dose is obtained, and believe that the solution of the difficulty lies in the direction of increased radium skin distance with the corresponding increase of radium element. The survival rate of cases of cancer in the oral cavity treated more than three years ago tends to be disappointing.

Cancer of the Rectum.—An interesting description is given of the technique in use at St. Bartholomew's Hospital for cancer of the posterior wall. This consists of perirectal needles passed through the perineal skin, and an ingenious arrangement of intracavitary radium on a rubber plaque pulled up by means of a tube passed through the colostomy opening. It is generally believed that radiation gives negligible results in the treatment of rectal cancer, but although the percentage of survivals is low the figures show that it is possible to cure the condition even when radical operation cannot be performed.

Sarcoma.—One or two cases giving a favourable response to radiation therapy are quoted, but the difficulty of accurate diagnosis, and the poor results in the proved cases of sarcoma of bone, suggest that detailed analysis is necessary before any conclusions can be drawn as to the value of irradiating the various forms of tumour derived from the mesoblastic elements.

Biopsy.—Workers at the Bland Sutton Institute of pathology at the Middlesex Hospital have been making routine confirmatory diagnoses of the presence of growth, with analysis of the type of growth present. In some of the cases the portion of tissue for section has been removed after electro-coagulation of the area, and such material is said to give reasonably good histological preparations. The advantages of this procedure include the following: (1) it is possible risk of dissemination of the growth is minimised; (2) it is more likely that a piece of tissue will be removed. (3) the reaction of the tissue does not interfere with the subsequent treatment of the patient.

¹ Report to the Council on the Work of the Health Committee, Geneva, 1935, 7th to 14th, London: Allen and Unwin Ltd.

² Medical Uses of Radium. Medical Research Council, Special Report Series No. 204. H.M. Stationery Office. 1935. Pp. 45. 1s.

The future of voluntary hospitals in Scotland was discussed last week at a meeting in Edinburgh of the Committee on Scottish Health Services. It was submitted by witnesses on behalf of the voluntary hospitals that their future depends on the attitude of the State and local authorities towards them during the next five years. Voluntary hospitals had approved the provisions of the Local Government Act, but its working had not been satisfactory. The local authorities had not proceeded on the principle of coöperation. It was urged that the voluntary hospitals should be officially recognised by the State as an essential factor in the health services, and that

a thoroughly representative organisation should be set up to bring them directly and officially into touch with the Department of Health for Scotland. The witnesses stated that the inadequacy of medical attention at home added greatly to their work, especially for children.

This whole subject bristles with difficulties. Local authorities are at present attempting to construct hospital services which will equal those provided by the voluntary hospitals. If the voluntary hospitals are able to maintain their present standard of efficiency, they are likely to remain the centres of the profession in Scotland. It is arguable that the State or local authority should see that the efficiency of the voluntary hospitals does not suffer from lack of funds. Any attempt, however, by the local authorities to control the management of the voluntary hospitals is bound to meet with strong resistance.

VIENNA

(FROM OUR OWN CORRESPONDENT)

FEWER MEDICAL GRADUATIONS

THE report of Vienna University for 1933-34 shows for the first time since the war a distinct and constant fall in the number of students qualifying for the M.D. In 1913-14 the number of female and male students promoted to that degree was 385. When peace returned there was a rush of students whose studies had been interrupted and the figure went up to 521 in 1920, and rose steadily to 743 in 1924-25. After this, for quite a while it remained fairly stationary at about 600. In 1932-33 it again reached 521, and in the following year 442. According to calculations the final figure for 1934-35 will not exceed 420. But already an increase in the number of medical students has been announced again this winter term, for over 1500 have applied for admission to the courses. This is somewhat unexpected, for the lowering of the practitioner's income and general standard of life is so vividly manifest that one would have thought young men would be very unwilling to take up this profession. The only explanation one can think of is that the outlook is just as bad in all the other "intellectual" occupations, and that many a youth, thinking that times may change before he is through with his studies, goes in for medicine because nothing better opens before him in this country.

MARRIAGE AND PROGENY IN AUSTRIA

The Vienna board of health publishes some interesting statistics of the ages of men and women at marriage. A period of ten years has been chosen for fair comparison, and it is found that of all the men married during that period only 0.1 per cent. were under twenty; the same percentage of girls (0.1) were under sixteen and 6 per cent. were under twenty. In the age-group 20-25 we find 8 per cent. of the male partners and 25 per cent. of the females. The next five-year age-group, 25-30, shows nearly 50 per cent. of males and 40 per cent. females. Thus the majority of the population marry before they pass the thirtieth year of life, and the most favoured age is 25-30 for both sexes. After this the frequency of marriage quickly diminishes, for we find only 1.5 per cent. of men marrying between fifty and sixty and only 0.7 per cent. above the latter age. With the women, the figures were: 0.5 per cent. married

between fifty and sixty, 0.2 per cent. between sixty and seventy, and less than 0.1 per cent. after that. As a rule there is a difference of about five years between the ages of the bride and bridegroom in the favoured periods of marriage: 65 per cent. of all brides belonged to the age-group 20-30, and just as many men in the age of 25-35. Within the last five years the average marriage age has gone up, especially in the rural districts, where as a rule the couples are mostly older than in towns. This is perhaps due to the feeling of the rural population that there is nothing blameworthy in a young woman having an illegitimate child. The parents are in no hurry to marry, and indeed may later marry other partners, no blame being attached to the woman.

The Board of Health's report also gives information about the relative age of parents and children. Of all children 45 per cent. were born within the first ten years of matrimony, and 10 per cent. within the first three years. In 5 per cent. of the births the mother was over forty (no figure is given here for the fathers' age). About 1.5 per cent. of the children had fathers over fifty (the age of the mothers is not stated). It is interesting that 0.5 per cent. of the births took place twenty years or longer after the marriage. The oldest mother within the period of observation was 49½ at the time of her baby's birth, the oldest (supposed) father 72. Altogether the number of couples without children is growing rapidly and alarmingly in the towns, as everywhere in Europe. The decline of the births is over 50 per cent. in the last decade. It may be added here that the number of illegitimate births declined only by 15 per cent. so that relatively these are going up.

DEATH OF PROF. PAUL

A few days ago Dr. Gustav Paul, formerly director of the Federal Vaccination Institute, died at the age of 76. He was a native of Prague (then an Austrian city), and soon after his graduation was appointed assistant at the Medico-forensic Institute there. He then served in the public health department of the Ministry of the Interior, and in 1895 took over the charge of the new institute in Vienna for producing vaccination lymph. He was the discoverer of the corneal test for the early diagnosis of small-pox, and the modern equipment of the institute and its excellent organisation are entirely due to him. He also originated the therapeutic use of lymph for cutaneous therapy of chronic rheumatism, which is much used in Central Europe.

NEW HOSPITAL FOR ILFORD.—The Ilford council have accepted a tender from the Essex county council for the site of the old Ilford pumping station on which a new hospital of from 300 to 500 beds is to be built. The new hospital is intended to serve Barking and Dagenham, leaving the King George Hospital to provide for the northern area.

KING EDWARD VII. HOSPITAL, WINDSOR.—This hospital is starting a contributory scheme, to which members are to contribute a shilling a week and in return receive a sum not exceeding £28 a year in any twelve months towards the cost of hospital or nursing-home treatment for themselves or for their wholly dependent relatives. So long as accommodation is available they will be received at the King Edward VII. Hospital, in the private wards, but if this is not possible they will be able to make arrangements with another hospital or nursing-home. Applicants over sixty years of age will not be admitted, and the scheme does not provide for treatment of any notifiable disease, or for maternity or chronic cases.

PANEL AND CONTRACT PRACTICE

Group Practice in America

THE problems of medical practice in America appear to resolve themselves into two: (1) How can medical care be made more efficient and free from fee-splitting and other stigmata of commercialism? (2) How can such care, with adequate remuneration for the doctors giving it, be brought within the economic resources of the poorer members of the community? For the solution of the first problem Dr. Hugh Cabot in his recent book¹ favours an extension of group practice, which is now increasing in America. The first group, and of course the most outstanding, is the Mayo Clinic, which began in 1887, and there are now about 150 groups covering a very wide area. The group includes general practitioners and specialists with laboratory aids working as a medical and financial unit, the fees being paid not to the individual doctors but to the group. There is a growing tendency to extend the facilities afforded by the group to isolated practitioners in country districts, and so enlarge the group's area of influence. The group is in fact an example of evolution by differentiation and integration.

The second problem presents, perhaps, more formidable difficulties. Compulsory health insurance has been suggested as a solution, but Dr. Cabot, though alive to the advantages secured in Europe, and especially in this country, by this measure, is doubtful whether it would succeed in America. Fifteen years' experience of prohibition does not encourage him to view with approval any further attempts to impose compulsion on a large scale on the American people. Moreover, he attributes the success of the British health insurance system largely to the fact that it is administered by officers trained in public administration whose appointment and tenure do not depend on political influence, and he can see no adequate body of such administrators in his own country. He favours a development of voluntary insurance, particularly the insurance now offered by some of the groups, an extension of the medical care now provided by many large employers, and a definite assumption by the State of responsibility for the provision of medical care for the indigent—a responsibility which in most American communities is fulfilled very imperfectly or not at all. He feels strongly that something effective ought to be done, and dissents from the view apparently taken by "organised medicine" in America—the Christian Science view that the difficulties of providing adequate medical care are imaginary, and that the doctors may safely, in the words of Mr. Dooley, "turn the job over to Destiny."

In other respects too Dr. Cabot's book may well be studied by all who wish to come to a right understanding on the proper relation of doctor and patient in a modern community. Dr. Cabot is well known in this country, for during the late war he commanded a British base hospital. His recollections go back to the last decade of the last century, the heyday of the family doctor, when people lived in smaller communities, where the local doctors knew every member of the families they attended and acquired a fund of information on family characteristics that was of great help in diagnosis, prognosis, and treatment. He tells how some 35 years ago he assisted at a consultation attended by three Harvard pro-

fessors on a case of pneumonia. When the professors after mature consideration had arrived at a favourable prognosis it occurred to one of them to ask the views of the family doctor. "He remarked tersely that the patient was a Jones before she married; that Joneses who showed abdominal distension on the fourth or fifth day of pneumonia died; and that she would die within the week. She did." But such intimate knowledge of family peculiarities has, Dr. Cabot thinks, become practically impossible in these days with the rapid shifting of population and the increasing reliance of the public on specialist services. In America specialism is far more developed than in this country; in some large cities over 60 per cent. of the practitioners are engaged in some form of special practice.

In certain quarters this development is deplored as undesirable and unnecessary. The American Medical Association have apparently accepted the proposition "that more than 80 per cent. of all the ailments for which people seek medical aid can be treated most cheaply and most satisfactorily by a family physician with what he can carry in a hand-bag." From this proposition, or dogma as he calls it, Dr. Cabot dissents; it seem to him to clothe the overworked general practitioner with powers beyond the capacity of the human mind. He thinks that the immense advances in knowledge and technique of the last 20 years have made specialist services necessary over a very wide field, which is likely to expand with further advances. He is, however, aware of the evils of specialism under commercialised conditions of practice, one of the worst being fee-splitting, which, it appears, is prevalent in some parts of America. Dr. Cabot tells of a questionnaire on the subject addressed to 105 doctors, not members of the local medical society, of whom 57 replied that they were in favour of fee-splitting, and 48 that they were against it. He thinks the practice is increasing and that the profession must either destroy it or be content to be destroyed by it.

Conflicting Tribunals

A case noted under this heading (Oct. 19th, p. 920) has had a sequel in the Courts when an action by the father of the deceased girl against the insurance practitioner concerned was heard. The case for the plaintiff ran into part of two days, but the judge stopped the case without calling on the defence as no cause of action had been disclosed and he was satisfied there was no cause for complaint against the doctor. The facts of the case were simple. At 11.30 P.M. on a certain Friday the insured person was suffering with acute pains in her stomach. The pains and vomiting became worse and the services of the doctor were sought some time after midnight. The doctor did not visit the patient but gave the father a small bottle of medicine, prescribing the dose, and indicating that the girl should be seen on the following morning. By 7 A.M. the girl was definitely worse and the doctor was again called. On this occasion he examined the girl and telephoned for an ambulance to take her to hospital where an immediate operation was performed. She died early on the following day, the cause of death being (a) heart failure due to toxæmia, (b) general peritonitis due to (c) perforated duodenal ulcer. The doctor's statement was that he had treated the girl for indigestion and severe constipation a few months previously and thought it was quite possible that she was

¹ The Doctor's Bill. By Hugh Cabot, C.M.G., M.D., a senior consulting surgeon in the Mayo Clinic. New York: Columbia University Press. 1935. Pp. 313. 15s.

suffering from a similar attack. The father did not in any way convey to him the impression that his daughter was seriously ill, and appeared quite satisfied when he left the house with the medicine. According to the doctor he told the father that he would call and see the patient early on the following morning.

On and Off the Medical List

An insurance practitioner whose name was removed from the medical list of an insurance committee as from a date in 1924 now desires to secure readmission to the list in another area. He has applied to the Minister of Health for the restoration of his name, and in accordance with custom the Minister has invited the views of the insurance and panel committees before he accedes. The doctor has produced testimonials on his behalf from medical practitioners who speak well of his conduct during the past few years and express the opinion that he can be relied upon not to repeat conduct of the kind which led to his removal from the list. Both committees have decided to raise no objection, but the insurance committee pointed out quite properly that notwithstanding it is eleven years since the name was removed from the list they do not regard the mere efflux of time as a sufficient reason for permission to rejoin.

Any doctor has a right to the inclusion of his name in the list subject to his accepting service under the terms in force; in the case of chemists the committee are required to consult the pharma-

ceutical committee before including their names. It sometimes happens that applications for inclusion in the medical list are made by doctors who clearly cannot comply with the terms of service, and insurance committees are sometimes a little embarrassed in view of the fact that they have no right to refuse such applications. For instance, the Kent committee have just considered an application for inclusion in their list of a doctor whose surgery is situated in the heart of London. In applying to Kent he states that the districts in which he undertakes to visit insured persons are contained within a radius of two miles of his address in London, and as this radius does not include any part of the county of Kent the committee take the view that the application is not one to which they can accede and they have informed the doctor accordingly.

Gin

A Kentish doctor who was surcharged 10d. for the supply of 1 oz. of gin in mixture to an insured person has appealed against the decision. In entering her appeal she submitted that the mixture supplied is a recognised formula in the treatment of insomnia in cases of pulmonary tuberculosis. The insurance committee have informed the panel committee that in their view the order for gin was not necessary, inasmuch as it was open to the doctor to order an official preparation which would have produced a similar effect.

PUBLIC HEALTH

Puerperal Pyrexia

THE decision taken nearly ten years ago to make puerperal pyrexia compulsorily notifiable was bound to bring several administrative problems in its train. For the first time a symptom rather than a disease was included in the list of conditions which must be notified to the medical officer of health, and this has not yet been fully realised by many practitioners. The definition of puerperal pyrexia as contained in the P.H. (Notification of Puerperal Fever and Puerperal Pyrexia) Regulations, 1926, is quite clear and cannot be too often emphasised; it is—

"any condition (other than puerperal fever) occurring in a woman within 21 days after childbirth or miscarriage in which a temperature of 100.4° F. or more has been sustained during a period of 24 hours or has recurred during that period."

The practitioner is not required to make a diagnosis as to the cause of the fever; the fever by itself renders the case notifiable.

The question is repeatedly asked: is notification intended to cover the whole period of pregnancy? It seems clear from the definition given above that it does so, since the term "miscarriage" is not limited to any stage of pregnancy. The question has not been decided by any legal ruling, but it is understood that the Ministry of Health has expressed the opinion that it is desirable on medical grounds that notification should not be limited to cases of fever occurring after the birth of viable children but should also include infection subsequent to abortion and miscarriage. This construction of the regulation should be widely known.

To whom should notification be made? The rules governing this were altered somewhat by the amending regulations of 1928, in which the original notification to the medical officer of health of the area "within which the place of residence of the

patient is situate" was changed to "within which (the notifying practitioner) is attending such woman." This was done in order to correct the anomaly of cases being primarily notified to the medical officers of districts far away from where the confinement took place and infection occurred, and it covers such cases as the large group who are confined in central institutions out of the area in which they reside and those who "go home to mother" for their confinement. An exception was made in the case of London, where cases arising in a hospital must be notified to the medical officer of the borough from which the patient was brought into the hospital. This was done in order to abolish the previously existing discrepancy between notification of puerperal fever and puerperal pyrexia. Cases which are brought into a district for treatment in a hospital after notification elsewhere, like all other notifiable infectious diseases, should not be re-notified or included in the returns of the district (R.G.'s Circular No. 51, 1934).

Lastly, on whom does the responsibility for providing assistance in diagnosis and treatment rest? The answer is (M. of H. Circular No. 722, 1926) that the authority for maternity and child welfare of the district in which the case occurs is clearly in the best position to render such assistance, either directly or by arrangement, and the M.O.H. of an area which is not an authority for maternity and child welfare who receives a notification of puerperal fever or pyrexia is required to forward it within 24 hours to the county medical officer.

FIFE AND KINROSS JOINT ASYLUM, CUPAR.—Plans for an extension to this hospital which will cost £42,400 have been accepted by the asylum committee. The extension provides for a main corridor with seven ward blocks.

CORRESPONDENCE

THE INDEPENDENT MIDWIFE

To the Editor of THE LANCET

SIR,—All who are interested in the practice of midwifery will thank you for the informed and sympathetic leading article on the independent midwife which was published in your last issue. The grave economic difficulties of the independent midwife were emphasised in the report of the Joint Council, to which reference is made in your article, and the data given by Lady Forber in her Fynes-Clinton lecture furnish convincing proof of the severity of these difficulties. Notwithstanding the drive to hospital which has been going on in recent years, domiciliary midwifery is still, and will probably remain, the basis upon which an organised maternity service must be built up. Midwives attend approximately 60 per cent. of all confinements in this country, and their work is done almost exclusively in the homes of the industrial classes. They therefore constitute a highly important unit of the maternity service as it exists at present, and it is an interest, not only of the medical profession, but also of the public, that their work should attain a high degree of efficiency. Midwives who are working under conditions of economic hardship, or even as we now know of actual privation, cannot give of their best, and it is unquestionable that suitable measures to improve their lot are long overdue.

Recent utterances of the Minister of Health suggest that the Government intend to establish a salaried service of midwives; this will provide full employment, adequate emoluments, and security for those who enter it. Unfortunately the number of midwives practising is considerably in excess of the number actually required; consequently a choice will have to be made and those who do not enter the salaried service will, if they remain in practice, be exposed to the existing economic difficulties. The problem of how to improve the lot of this remainder is both complex and difficult. It should, however, be borne in mind that not all of them are entirely dependent for a livelihood on what they earn as midwives. An unspecified proportion of them are "part-time" midwives, who have other means of support, and sometimes follow other occupations when not actually engaged in maternity work. There is much to be said for the view that a midwife's work should always be a "whole-time" job; she will not do her best unless she is in it heart and soul, nor can she maintain her professional efficiency if there are long or frequent intervals in which her attention is turned to other pursuits. There is reason to believe that many part-time midwives turn to other occupations because they cannot get enough cases to earn a livelihood, but many others are part-time midwives from choice, and take cases only as a means of earning a little extra money when required.

The liberty which midwives now possess to regard midwifery as a subsidiary interest, and not as a serious profession which demands their whole attention, is an anomaly which is detrimental to the interests both of the public and of themselves. It may be difficult to end this anomaly at a stroke, but it is inconceivable that it should remain as a permanent feature of our midwifery system.

I am, Sir, yours faithfully,

T. WATTS EDEN.

London, W., Nov. 4th.

To the Editor of THE LANCET

SIR,—The Midwives' Institute has agreed in principle with the establishment of a service of salaried midwives, but it has always realised that, if such a service is to be successful, the competent midwives now in practice must be retained so far as is possible. The returns for the questionnaire sent by the Institute to independent midwives, and ably reviewed by Lady Forber in a preliminary survey at the Fynes-Clinton lecture which you discuss in your leading article of Nov. 2nd, do in fact show that the middle-aged private midwife is the stand-by of the mother, especially in urban areas, and as is well known her records are for the most part excellent.

It has to be recognised that until schemes can be devised to make recruitment to the midwifery service an attractive and permanent profession to young well-educated women, both by regulation of the number of entrants and the provision of a longer and better training, both expediency and justice will be best served by making full use of the most experienced of the present-day midwives. It also needs to be realised that the midwife who is employed as a full-time worker requires adequate pay; her expenses which must be incurred in connexion with her profession are considerable and include the provision of uniform, apparatus, telephone, and suitable domestic help. The Institute is making further detailed inquiry into the cost of these items, but it is certain that the midwife's salary should not, on the above grounds alone, be in any case less than that now given to health visitors; and further, in assessing salaries above the minimum, the greater responsibility of the midwife should be taken into account.

The Midwives' Institute, although it holds fast to the conviction that the midwife must always hold full personal responsibility for her own part of the work, knows well that safe pregnancy and parturition require the close coöperation of doctors and midwives.

I am, Sir, yours faithfully,

E. M. PYE,

President, the Midwives' Institute.

57, Lower Belgrave-street, S.W., Nov. 4th.

THE TOXÆMIA OF BURNS

To the Editor of THE LANCET

SIR,—Patients who die during the first four days following the infliction of a severe burn are generally debited to that nebulous and all-pervading entity known as "toxæmia," the Atlas or Hercules of surgery and midwifery, on whose broad shoulders is placed responsibility for nearly every catastrophe not clearly due to a known deadly agent. With the adoption of the tannic-acid treatment of burns by E. C. Davidson, of Detroit, in 1925, the percentage of deaths in the stage of "acute toxæmia" fell significantly: an improvement ascribed, quite justifiably, to the coagulating effect of tannic acid on soluble protein, resulting in less absorption of some toxic and supposedly albuminous substance dissolved and possibly denatured. It is stated in the Medical Research Council's special report (No. 141, p. 10): "No antibodies (to these toxic substances) are produced." Sepsis, in these cases, is yet to be controlled, as the same report admits in the con-

cluding paragraph: "Further therapeutic advances will follow the lines of simplifying and shortening the methods for inducing coagulation, and of more efficiently preventing and controlling sepsis." In the absence of sepsis, the M.R.C. authorities seem to imply, there can be no toxæmia due to bacteria; the first four days' sickness, they conclude, is too early for any possible bacterial action.

It occurred to me that a proportion of the cases dying of "acute toxæmia" during the four dangerous early days might be accounted for on the assumption that their symptoms were due to the absorption of staphylococcal toxin. This theory I have not yet had the opportunity of testing on any effective scale, but I think it worthy of consideration. One case of an adult whom I had treated for an independent condition with a long course of staphylococcal toxoid injections fell and was dragged while playing polo and sustained a very extensive graze, including the skin over nearly the whole of his back and shoulders. This healed without any signs of sepsis or toxic absorption—a most unusual result. More important, Prof. R. Cruickshank (Jour. Path. and Bact., Sept., 1935, p. 367) found *Streptococcus hæmolyticus* in the skin of half his burn cases on the second day; *Staphylococcus aureus* was also frequently present, and *Staph. albus* in 56 per cent. of cases on the first day. Staphylococcal toxin can be produced in the body very rapidly, and its effects may not be preceded by any display of "sepsis," as the Bundaberg disaster taught us. I suggest that every case of severe burn should receive intravenously, at the earliest possible moment, an injection of staphylococcal antitoxin amounting, for an adult of normal size, to at least 5000 international units. I believe it is the practice in some hospitals to give streptococcal antitoxin prophylactically; the staphylococcal antitoxin could be combined with this.

People constantly exposed to the risk of severe burns, by nature of their employment, could be treated prophylactically with a course of staphylococcal toxoid injections.

I am, Sir, yours faithfully,

FRANK MARSH.

Pathological Laboratory, c/o Anglo-Iranian Oil Co., Ltd.,
Masjid-i-Sulaiman, via Ahwaz, South Iran, Oct. 20th.

BREATHING EXERCISES IN ASTHMA

To the Editor of THE LANCET

SIR,—My attention has just been called to an article by Dr. J. L. Livingstone in THE LANCET of Sept. 28th entitled the Value of Breathing Exercises in Asthma. I feel bound to add from first-hand knowledge some facts to his account. I was chairman of King's College Hospital from 1929 to 1933; as over a long period of years Miss Seyfang had effected complete and lasting cures for asthma for many of my relatives and friends by means of breathing exercises, and as she was perfectly willing, indeed anxious, to place the exercises that she had devised into a system after years of study and training at the disposal of the medical profession, I suggested to Dr. Livingstone that she should work in the Asthma Clinic at King's so that her methods could be observed and the results tabulated. This was arranged, and as a consequence Dr. Livingstone told me himself that he had never before seen anything to approach the successes obtained by the exercises. Unfortunately in arranging for their extension he took the view that no training was necessary in them for the giver. They were incorrectly given in con-

sequence, and as any failure would then have been attributed to Miss Seyfang's system she, with my approval and indeed at my advice, ceased to give her services. She had given them for nearly two years on a purely honorary basis and with undisputed success. Dr. Livingstone says in his article that the system of exercises used by Miss Seyfang "differed only in detail" from those already known. I cannot recall that any breathing exercises for asthma were successfully used at King's before her advent, and in any case surely that remark is equivalent to a practitioner saying that he knew that a certain cure was good for a certain disease but that he did not know, in detail, what the prescription should be.

Miss Seyfang has never complained of the ungenerous treatment she received, but has continued her extremely successful work in her own clinic, and has earned the lasting gratitude of all who have been to her.

I am, Sir, yours faithfully,

31, Kensington-square, W., Oct. 31st.

GORELL.

QUININE AMBLYOPIA

To the Editor of THE LANCET

SIR,—As cases of quinine amblyopia are rare in this country, the enclosed picture of the left fundus of a patient's eye may be of interest to some of your readers. The disc is atrophic, and some of the arteries have become thread-like, while the visual fields were contracted peripherally. In spite of these changes, after a few injections of strychnine, the patient got full vision with glasses for a small amount of myopia.

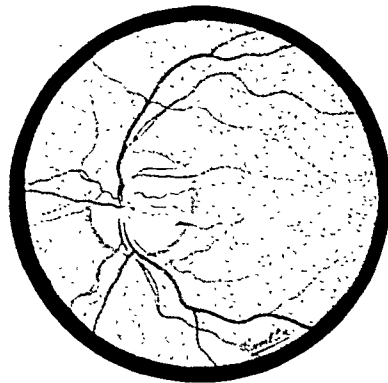
The patient was seen for Dr. G. Hume (who was away), and the history was that after being away from white people for two years, doing administrative work among natives in Africa, he developed obsessions and, being invalided home, tried to end his life by taking 60 grains of quinine. He went blind and deaf, but when I saw him sight and hearing had somewhat recovered. He was 26 years of age. The cerebro-spinal fluid was normal, but the blood gave a very faint Wassermann reaction, which was not confirmed later. As the fundus, visual fields, and history are typical of quinine poisoning, and there were neither history nor signs of syphilis, that can be excluded.

My friends in the tropics tell me that 15 grains of quinine sometimes make patients uncomfortable. My chemist-patients and friends here tell me that women try it as an abortifacient, but generally get frightened and give it up on the first signs of giddiness, headache, deafness, or interference with their sight—symptoms which may be produced by doses of 15-30 grains.

I am, Sir, yours faithfully

Harley-street, W., Oct. 29th.

SYDNEY TIBBLES.



ATTITUDE OF SURGERY TO HÆMATEMESIS

To the Editor of THE LANCET

SIR,—Correspondence on Mr. Gordon-Taylor's address has been so much taken up with discussion of Prof. Finsterer's statistics that I hope I may be allowed to bring back attention to those the author gave from his own practice. Mr. Gordon-Taylor's addresses are always stimulating and refreshing—stimulating in their surgical ideas and refreshing in their phraseology. Statistics from his pen are not antagonistic things inviting criticism, but they are none the less worthy of consideration.

We read that for the period 1910-24 he operated on 22 cases of hæmatemesis from peptic ulcer with 2 deaths; he makes it clear that in this period the cases on which he operated were mostly dealt with in the first twenty-four hours. During the period 1924-26 he operated on 10 cases with 4 deaths, but these were mostly later cases. A spirit of self-criticism and disinclination to operate induced an abstinence from active surgery for five years, and during this time the mortality of acute hæmatemesis from chronic ulcer in cases which he saw was enormous. We read further that the mortality of cases of hæmatemesis from chronic ulcer of the stomach or duodenum treated medically at the Middlesex Hospital from 1924 to 1933 inclusive, in which a second large hæmorrhage occurred, was no less than 78 per cent., and that with each successive bleeding the death-rate mounted higher. A return to active surgery was obviously indicated, for we may take it that the treatment as carried out by the physicians of the Middlesex Hospital left nothing to be desired, and it is worthy of note that the medical department of this hospital is responsible for one of the most recent advances in treatment—the adoption of the blood-drip transfusion.

The question as to the type of operation to be performed in any particular instance is perhaps more debatable. In assessing Prof. Finsterer's figures on gastrectomy for hæmatemesis it must not be forgotten that this distinguished surgeon has perhaps the most extensive experience in the world of the operation of gastrectomy, and on his own confession has performed the operation more frequently than appendicectomy—an experience which must be unique. Should it become customary for British surgeons to perform a partial resection in every case of acute hæmatemesis due to peptic ulcer the result might be disastrous. Gastrectomy seems to be an unnecessarily severe operation for a desperately ill patient, granting even the facilities of blood transfusion and up-to-date institutional equipment. I do not wish to convey that Mr. Gordon-Taylor is a strong protagonist of gastrectomy in these cases, for he expressly states in his address that the technique he adopts varies in different cases and is dictated by various considerations.

Dr. Aitken's request that surgery should be restricted to the minimum of interference agrees with the teaching of Mr. James Sherrin at the London Hospital. Like Mr. Gordon-Taylor, Mr. Sherrin was a strong advocate of operation as soon as possible after the first hæmorrhage, but he was usually content with ligation of arteries, or, if need be, exposure of the ulcer and direct control of the bleeding point; resection where necessary was confined to the ulcerated area. Prof. Finsterer is opposed to the ligation of the gastroduodenal artery in cases of hæmorrhage from a posterior ulcer of the duodenum, for he believes that in about 4 per cent. of cases the anastomosis around the head of the pancreas is

not adequate. It seems doubtful whether this is a serious objection when we consider that in a proportion of cases of duodenectomy there must be material interference with this artery in the course of the operation.—I am, Sir, yours faithfully,

Harley-street, W., Nov. 5th.

MICHAEL SMYTH.

CHRONIC NASAL SINUSITIS AND MENTAL DISORDER

To the Editor of THE LANCET

SIR,—The review of my book in your journal of Sept. 21st states (p. 669) that "the finding of sinusitis in patients who died in mental hospitals, often after many years of institutional life, cannot be taken as etiologically significant in the absence of control data." As this statement might be taken to imply that sinusitis develops as the result of residence in mental hospitals, I have collected the data relating to 572 consecutive post-mortems. These show:

(1) That the amount of sinusitis in mental hospital patients actually decreases at a steady rate during the time they are in hospital, many persons after more than 30 years' stay in hospital having sinuses of perfectly normal appearance.

(2) That chronic sinusitis has no special relationship to age (being found in infants a few weeks old), since patients over 80 may have sinuses of quite normal appearance.

(A)			(B)		
Time in hospital.	Cases.	Sinusitis. Per cent.	Ages in years.	Cases.	Sinusitis. Per cent.
1 month or less..	91	65	0-20 ..	10	70
1-12 months ..	122	62	20-30 ..	49	61
1-5 years ..	152	57	30-40 ..	87	68
5-10 ..	74	56	40-50 ..	128	56
10-20 ..	80	56	50-60 ..	131	52
20-30 ..	37	57	60-70 ..	105	55
Over 30 ..	16	44	70-80 ..	49	65
			Over 80 ..	10	70
—	572	—	—	572	—

In a consideration of the figures supplied one must avoid the error of relating the actual sinusitis to the mental disorder; since it is only special complications arising from the sinusitis, such as a periodic bacteriæmia, or a continued local spread of toxins towards the brain, which are of importance in this connexion. Such complications are etiologically related to pathological brain changes which cause local defect of function; in some cases this is shown by abnormal behaviour or bizarre mental phenomena. Histological spreading of organisms from a nasal sinusitis has been demonstrated in some mental patients, and it is probable that clinical investigation will show that a previously unsuspected large proportion of cases of chronic nasal sinusitis sooner or later show abnormal mental symptoms or behaviour.

Exactly however what is demanded or meant by "control data" is not clear.

I am, Sir, yours faithfully,

F. A. PICKWORTH.

City and University of Birmingham Joint Board of Research for Mental Disease, Birmingham, Oct. 28th.

** The statement implied nothing but the need for controlled data. These would consist of an adequate number of observations on the frequency of nasal sinusitis, investigated and determined by Dr. Pickworth's procedure, in persons mentally healthy but living under conditions as similar as possible to those of Dr. Pickworth's mental hospital patients. The substitution of "pyorrhœa" for "sinusitis" may serve to illustrate the need for such controlled data.—Ed. L.

MEDICAL GRADUATES FOR PARLIAMENT

SEVENTEEN members of the late House of Commons held a medical qualification, two of whom—Dr. G. B. Hillman and Dr. Joseph Hunter—died during the session. Of the remainder, two have been re-elected without opposition.

Name.	Constituency.	Party.
Prof. T. Sinclair	.. Queen's University, C. Belfast.	
Dr. J. H. Williams	.. Carmarthen (Llanely) Lab.	

Thirteen others are standing for re-election along with fourteen new candidates, seven of whom have contested Parliamentary seats before. In the following list those who sat in the last Parliament are indicated by a dagger sign, those who have sat in any previous Parliament by a double dagger, and those who have stood before without success by an asterisk.

LONDON BOROUGHES

Candidate.	Constituency.	Party
†Dr. Alfred Salter	.. Bermondsey (West)	.. Lab.
*Dr. C. R. Cooke-Taylor	.. Camberwell (Dulwich)	.. L.
†Dr. J. D. Cooke	.. Hammersmith (South)	.. C.
Dr. G. de Swietochowski	.. Paddington (North)	.. L.
Dr. Elizabeth Jacobs	.. St. Marylebone	.. Lab.
Dr. S. W. Jeger	.. St. Pancras (South-East)	.. Lab.
†Dr. W. J. O'Donovan	.. Stepney (Mile End)	.. C.
†Sir Henry Jackson	.. Wandsworth (Central)	.. C.

ENGLISH BOROUGHES

Dr. Edith Summerskill	.. Bury	.. Lab.
Dr. D. McIntosh Johnson	.. Bury	.. L.
*Dr. Percy McDougall	.. Manchester (Rusholme)	.. Ind.
†Dr. J. W. Leech	.. Newcastle-on-Tyne (West)	.. C.
*Dr. R. A. Lyster	.. Preston	.. Lab.
†Dr. A. B. Howitt	.. Reading	.. C.
†Mr. Somerville Hastings	.. Reading	.. Lab.
*Dr. C. W. Brook	.. Smethwick	.. Lab.
Dr. S. Segal	.. Tynemouth	.. Lab.

ENGLISH COUNTIES

†Sir John Worthington	.. Gloucester (Forest of Dean)	.. N. Lab.
†Sir Francis Fremantle	.. Herts (St. Albans)	.. C.
†Dr. H. C. Haslam	.. Lines (Horncastle)	.. C.
†Rt. Hon. C. Addison	.. Wilts (Swindon)	.. Lab.

WELSH COUNTIES

†Dr. L. Haden Guest	.. Brecon and Radnor	.. Lab.
†Dr. J. H. Morris-Jones	.. Denbigh (Denbigh)	.. L. Nat.

SCOTTISH BURGHS

Dr. R. A. Barlow	.. Edinburgh (Central)	.. L.
†Rt. Hon. Walter E. Elliot	.. Glasgow (Kelvingrove)	.. C.

SCOTTISH COUNTIES

*Dr. W. S. Russell	.. Aberdeen and Kin-	
Thomas.	.. cardine (Central)	.. L.

UNIVERSITIES

†Sir Ernest Graham-Little	.. London University	.. Ind.
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C=Conservative. Ind.=Independent. L.=Liberal. L. Nat.=Liberal National. Lab.=Labour. N. Lab.=National Labour.

BRIEF PERSONAL NOTES

Right Hon. CHRISTOPHER ADDISON, M.D. Lond., F.R.C.S. Eng., who was the first Minister of Health (1919-21) and Minister of Agriculture in the Government of 1929, was at one time professor of anatomy at University College, Sheffield. He has also been Hunterian professor at the Royal College of Surgeons, and lecturer on anatomy at St. Bartholomew's Hospital.

RICHARD A. BARLOW, B.Sc., M.B., F.R.F.P.S. Glasg., who is standing for Edinburgh, Central, is senior partner in a general practice at Rochdale. He qualified at Glasgow University in 1913 and has held appointments in Glasgow and Cape Town.

C. W. BROOK, M.R.C.S. Eng., qualified from St. Bartholomew's Hospital in 1925. He has for the last four years represented Southwark North on the London County Council in the Labour interest and has been chairman of the committee for welfare of the blind. He stood unsuccessfully for Wandsworth in 1929.

J. DOUGLAS COOKE, M.B. Melb., F.R.C.S. Eng., qualified in Australia and was resident at the London Hospital. He practised for twenty years at Stanmore and contested Peckham unsuccessfully, before gaining the seat at Hammersmith (South).

C. R. COOKE-TAYLOR, M.R.C.S., D.P.M., took honours in jurisprudence at Oxford and was called to the bar in 1910. He qualified from University College Hospital in 1927. He is visiting physician to the British Hospital for Nervous and Mental Disorders, and psychologist to the Ex-Service Welfare Society. This is the eighth time he has contested Dulwich; he stood for Holborn in 1910. He is hon. treasurer of the University of London Liberal Association.

Right Hon. WALTER E. ELLIOT, M.C., M.B., D.Sc. Glasg., LL.D. Aberd., who first entered Parliament in 1918, was Under Secretary of Health for Scotland in 1923. He has been Minister of Agriculture and Fisheries since Sept., 1932.

SIR FRANCIS FREMANTLE, O.B.E., M.D., M.Ch. Oxon., F.R.C.S. Eng., F.R.C.P. Lond., has sat in six Parliaments as member for the St. Albans division, and has been chairman of the Parliamentary medical committee. He was for fifteen years county medical officer of health for Herts, and is deputy lieutenant and a justice of the peace.

SIR ERNEST GRAHAM-LITTLE, B.A., Univ. Cape of Good Hope, M.D., F.R.C.P. Lond., who has represented the University of London since 1924, is in charge of the skin department at St. Mary's Hospital, London. He has been a member of the University senate since 1905 and has long been chairman of the external council. In the last Parliament he was chairman of the road accidents Parliamentary group.

L. HADEN GUEST, M.C., M.R.C.S., was member for North Southwark in 1923 and became Parliamentary private secretary to the Minister of Health. He has been school medical officer, consulting physician to St. George's school clinic, Blackfriars, and a member of the London County Council.

HENRY C. HASLAM, M.A., M.B., Sc.D. Camb., has been member for the Horncastle division of Lincoln since 1924. Before that he spent twenty years in biochemical research at Cambridge, holding the John Lucas Walker studentship.

SOMERVILLE HASTINGS, M.S. Lond., F.R.C.S. Eng., who is surgeon and lecturer to the ear and throat department of the Middlesex Hospital, is contesting Reading for the fifth time. He sat for Reading in two previous sessions but was defeated by Dr. Howitt at the last election; in 1923-24 he was private Parliamentary secretary to the President of the Board of Education. He represents Stepney (Mile End) on the London County Council and is chairman of the hospitals and medical services committee. He is president of the Socialist Medical Association.

A. B. HOWITT, C.V.O., M.D. Camb., was Epsom scholar at St. Thomas's Hospital, qualifying in 1906, and holding a number of hospital appointments, including that of resident medical officer at St. Thomas's Home. This is the fourth time he has stood for Parliament. He contested Preston in the general election of 1929 and again two months later at a by-election. In the 1931 election he defeated Mr. Somerville Hastings at

Reading and he is standing again for the same constituency. He has been secretary to the Parliamentary medical committee for the past four years.

Sir HENRY JACKSON, Bart., M.A. Camb., B.Sc. Lond., M.B. Edin., who was formerly senior tutor and lecturer at Downing College, Cambridge, and in general practice on Putney Hill, was Mayor of Wandsworth from 1921-24. He is treasurer of the Bolingbroke Hospital, vice-chairman of the London voluntary hospitals central committee, and president of London University Conservative Association. He has represented Wandsworth (Central) in two previous Parliaments.

ELIZABETH JACOBS, M.R.C.S. Eng., who is contesting St. Marylebone, qualified from St. Mary's Hospital in 1925 and is in general practice with her husband in Maida Vale.

SANTO W. JEGER, M.R.C.S. Eng., who has a general practice in East London, qualified from the London Hospital in 1923. He was Mayor of Shoreditch in 1929 and has been for six years chairman of the public health committee. Since 1931 he has represented Shoreditch in the Labour interest on the London County Council; he is a member of the hospitals and medical services committee and vice-chairman of the parliamentary committee. Dr. Jeger is chairman of the Heatherwood Hospital and was one of the founders of the Socialist Medical Association.

D. McINTOSH JOHNSON, M.B. Camb., who is standing for Bury, qualified from St. Bartholomew's Hospital in 1926 and after holding house appointments took charge of the Harrington Hospital (International Grenfell Association) in Labrador. He is a barrister-at-law and is now in general practice at Thornton Heath, Surrey.

J. W. LEECH, M.D., D.Ch. Durh., F.R.C.S. Edin., who was Sheriff of Newcastle-on-Tyne, 1930-31, and Lord Mayor 1932-33, is consulting surgeon to the Royal Victoria Infirmary. He is ex-president of the Newcastle Clinical Society and of Durham University Medical Graduates Association, and a county J.P. He represented Newcastle (West) in the last Parliament.

R. A. LYSTER, B.Sc. Lond., M.D., D.P.H. Birm., who contested the Winchester division of Hants in the general elections of 1929 and 1931, was county medical officer of health for Hampshire from 1908 to 1929. He has been president of the Society of Medical Officers of Health and of the Association of County Medical Officers. He has just been returned for the third time as Labour member of the Bournemouth town council.

PERCY McDougall, B.Sc. Lond., M.B. Vict., who is standing as an independent candidate for the Rusholme division of Manchester, contested the same seat at a by-election in November, 1933. He qualified at Manchester in 1894, was house surgeon at the Royal Infirmary, and has been 34 years in general practice in Fallowfield. He finds in land monopoly the great disease in the body politic.

JOHN H. MORRIS-JONES, M.C., L.R.C.P. Edin., who was returned for Denbigh unopposed at the last general election, was in general practice there for twenty years and is now senior consulting physician to the West Denbigh Hospital. For three years he has been a Government whip.

W. J. O'DONOVAN, O.B.E., M.D., M.R.C.P. Lond., is physician to the dermatological department and lecturer on dermatology at the London Hospital, which is in the centre of his constituency. In and out of the House of Commons he has made a special effort to represent the medical point of view. He is chairman of the University of London Conservative Association.

ALFRED SALTER, M.D. Lond., D.P.H., has sat for his constituency continuously since 1922. He was

chairman of the medical committee during the 1929 Parliament. He is a J.P. for the county of London and an alderman of Bermondsey Borough Council. He retired from general practice in Bermondsey in 1929 and is now engaged in consultant work chiefly in connexion with claims of injured workmen under the Workmen's Compensation Acts.

SAMUEL SEGAL, B.A. Oxon., M.R.C.S. Eng., was exhibitor at Jesus College, Oxford, and qualified from the Westminster Hospital in 1927, after which he held resident appointments there. Since 1929 he has been in general practice in north-west London.

THOMAS SINCLAIR, C.B., M.D., M.Ch. R.U.I., F.R.C.S. Eng., who has been returned unopposed for Queen's University, Belfast, holds the chair of surgery in the university, and is consulting surgeon to the Belfast Royal and other hospitals. He is a member of the General Medical Council and a senator for Northern Ireland.

EDITH C. SUMMERSKILL, M.R.C.S. Eng., who qualified from Charing Cross Hospital in 1924, is medical director of the birth control clinic at Wood Green, and member of council of the National Birth Control Association.

GEORGE DE SWIETECHOWSKI, M.D. Munich, M.R.C.S. Eng., who is a general practitioner in Paddington, was born in Poland and qualified in this country in 1912. During the war he was civil medical officer to the 4th London General Hospital. He was the first president of the Paddington Medical Society, and one of the founders of the London public medical service. He is chairman of executive of the Medical Practitioners' Union and has represented Paddington for twelve years on the London Panel Committee.

WM. S. RUSSELL THOMAS, M.B. Camb., who is standing for the central division of Aberdeen and Kincardineshire, qualified from Guy's Hospital in 1919 and after holding resident appointments there and elsewhere settled in general practice at Warlingham, Surrey. In 1931 he contested Ilford without success. He is a barrister-at-law.

J. H. WILLIAMS, L.S.A., who qualified from the London Hospital in 1902, is partner with his son in general practice at Burry Port. He is a member of the Middle Temple, a justice of the peace, and chairman of the public health committee for the county of Carmarthen.

Sir JOHN WORTHINGTON, M.R.C.S. Eng., who is standing again for the Forest of Dean division of Gloucester, was Parliamentary private secretary to Mr. Ramsay MacDonald when Prime Minister. He comes of a medical family and qualified from the London Hospital in 1895.

LONDON MEDICAL SOCIETIES

At the opening of a new session we are again giving for the convenience of our readers the names of presidents and hon. secretaries of London medical societies, with the addresses at which they can be approached.

Royal Society of Medicine.—President: Dr. Robert Hutchison. Hon. secretaries: Dr. Anthony Feiling and Mr. G. T. Mullaly. (1, Wimpole-street, W.1.)

Medical Society of London.—President: Prof. G. E. Gask. Hon. secretaries: Mr. C. P. G. Wakeley and Dr. A. H. Douthwaite. (11, Chandos-street, W.1.)

Hunterian Society.—President: Dr. W. Brander. Hon. secretaries: Mr. M. Oldershaw and Mr. A. E. Porritt. (26, Upper Wimpole-street, W.1.)

Harveian Society.—President: Mr. L. E. C. Norbury. Hon. secretaries: Dr. A. D. Morris and Mr. John Hunter. (Hammersmith Hospital, Duane-road, W.12.)

Royal Society of Tropical Medicine and Hygiene.—President: Sir Arthur Bagshawe. Hon. secretaries: Dr.

C. M. Wenyon, F.R.S., and Dr. Hamilton Fairley. (Manson House, 26, Portland-place, W.1.)

Royal Medico-Psychological Association.—President: Dr. Reginald Worth. Hon. general secretary: Dr. Reginald Worth. (Springfield Mental Hospital, S.W.17.)
Society of Medical Officers of Health.—President: Dr. W. G. Savage. Executive secretary: Mr. G. L. C. Elliston. (1, Thornhaugh-street, W.C.1.)

Association of Industrial Medical Officers.—President: Dr. N. Howard Mummery. Hon. secretary: Dr. Donald Stewart. (I.C.I. Metals Ltd., Kynoch Works, Witton, Birmingham.)

Tuberculosis Association.—President: Dr. L. S. T. Burrell. Hon. secretary: Dr. F. R. G. Heaf. (Colindale Hospital, Hendon, N.W.9.)

British Institute of Radiology.—President: Dr. L. A. Rowden. Hon. secretaries: Dr. R. Boulton Myles and Mr. G. E. Bell, M.Sc. (32, Welbeck-street, W.1.)

Medico-Legal Society.—President: Mr. C. A. Mitchell, D.Sc. Hon. secretaries: Mr. Ernest Goddard and Dr. W. G. Barnard. (3, South-square, Gray's Inn, W.C.1.)

London Association of the Medical Women's Federation.—President: Dr. E. M. Pickard. Hon. secretary: Mrs. Philippa Martin. (40, Wimpole-street, W.1.)

Medical Society of Individual Psychology.—Chairman: Dr. C. M. Bevan-Brown. Hon. secretary: Dr. Alexander Baldie. (7, Warrington-gardens, Warwick-avenue, W.9.)

Society for the Study of Inebriety.—President: Dr. William Brown. Hon. secretary: Dr. T. N. Kelynack. (144, Harley-street, W.1.)

The Cancer Society.—President: Dr. A. C. Magian. Hon. secretary: Dr. D. F. Kennard. (225, Euston-road, N.W.1.)

London Jewish Hospital Medical Society.—President: Dr. D. N. Nabarro. Hon. general secretary: Dr. Max Sorsby. (London Jewish Hospital, Stepney Green, E.1.)

St. John's Hospital Dermatological Society.—President: Dr. J. E. M. Wigley. Hon. secretary: Dr. I. Muende. (49, Leicester-square, W.C.2.)

Chelsea Clinical Society.—President: Mr. H. Paxton Baylis. Hon. secretaries: Mr. A. Rugg-Gunn and Mr. Robert Cutler. (8, Lower Sloane-street, S.W.1.)

Hackney Medical Society.—President: Dr. A. J. Ambrose. Hon. secretary: Dr. H. Stark. (26, Stoke Newington Common, N.16.)

Hampstead Medical Society.—President: Dr. J. Alison Glover. Hon. secretaries: Dr. John Kennedy and Dr. T. J. Hollins. (13, Belsize-park, N.W.3.)

North London Medical and Chirurgical Society.—President: Mr. John Hunter. Hon. secretaries: Dr. W. E. Snell and Dr. J. W. Campbell Maxwell. (Royal Northern Hospital, N.7.)

North-West London Medical Society.—President: Sir Harold Gillies. Hon. secretary: Mr. Lionel Green. (127, Harley-street, W.1.)

Priory Medical Society.—Hon. secretary: Dr. J. Clark Wilson. (18, College-crescent, N.W.3.)

South-West London Medical Society.—President: Dr. R. J. Saunders. Hon. secretaries: Dr. E. G. Housden and Dr. A. W. Wells. (51, Longley-road, S.W.17.)

Paddington Medical Society.—President: Dr. Alexander Baldie. Hon. secretary: Dr. S. Crown. (81, Elgin-avenue, W.9.)

West London Medico-Chirurgical Society.—President: Dr. Bernard Myers. Hon. secretaries: Mr. James Kemble and Dr. W. K. McKinstry. (128, Harley-street, W.1.)

West Kent Medico-Chirurgical Society.—President: Dr. J. R. Wyllie. Hon. secretary: Dr. C. J. B. Buchan. (267, Baring-road, Grove Park, S.E.12.)

Surg. Lt.-Comdr. F. C. Bamford to *Maine*.
Surg. Lt. H. de B. Kempthorne to *Ramillies*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. (D) H. P. Buchanan promoted to Surg. Lt.-Comdr. (D).
T. D. G. Wilson entered as Proby. Surg. Lt.

ROYAL ARMY MEDICAL CORPS

Majs. R. R. Thompson, M.C., and D. McVicker, M.C., retire on ret'd. pay.

Capt. H. N. Walker is placed on the half-pay list on account of ill-health.

Short Serv. Commissions.—Lts. to be Capts.: K. H. Clark, C. S. Gamble, J. A. D. Johnston, J. A. Scott, W. G. Greene, W. M. Oxley, O. R. L. L. Plunkett, R. H. Hunt, F. Williams, A. J. A. Gray, J. Reeve, G. M. Denning, H. H. Atkinson, J. O'Connell, and C. G. O'Driscoll.
Lt. (on prob.) A. Gleave is rest'd. to the estab.

REGULAR ARMY RESERVE OF OFFICERS

Capt. W. W. Phillips resigns his commn.

ARMY DENTAL CORPS

W. F. O'Carroll is granted a temp. commn. in the rank of Lt.

TERRITORIAL ARMY

Majs. C. P. Oliver and A. J. Chillingworth resign their commns.

Lts. H. S. H. Gilmer and E. D. Fitzpatrick to be Capts.

ROYAL AIR FORCE

Squadron Leader W. J. G. Walker to R.A.F. Station, Kenley, for duty as Medical Officer.

Flight Lt. H. Penman is promoted to the rank of Squadron Leader.

Flight Lt. G. H. J. Williams to No. 1 Armament Training Camp, Carfoss.

Dental Branch.—Flying Offr. A. Maben to R.A.F. Depot, Uxbridge.

INDIAN MEDICAL SERVICE

Capt. G. P. Charlewood is confirmed in his appt.
Indian Medical Department.—Capt. (Sen. Asst. Surg.) H. C. De Penning retires.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED
OCT. 26TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2889; diphtheria, 1199; enteric fever, 27; acute pneumonia (primary or influenzal), 713; puerperal fever, 49; puerperal pyrexia, 112; cerebro-spinal fever, 8; acute poliomyelitis, 23; acute polio-encephalitis, 2; encephalitis lethargica, 3; dysentery, 15; ophthalmia neonatorum, 72. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 1st was 3112, which included: Scarlet fever, 1171; diphtheria, 1203; measles, 42; whooping-cough, 246; puerperal fever, 20 mothers (plus 10 babies); encephalitis lethargica, 277; poliomyelitis, 12. At St. Margaret's Hospital there were 20 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox or enteric fever, 13 (1) from measles, 2 (0) from scarlet fever, 2 (0) from whooping-cough, 32 (6) from diphtheria, 60 (14) from diarrhoea and enteritis under two years, and 46 (9) from influenza. The figures in parentheses are those for London itself.

Measles proved fatal in 5 cases at Manchester and 4 at Liverpool. Leeds reported the only deaths from whooping-cough. Warrington had 3 fatal cases of diphtheria. Portsmouth, Liverpool, Wallasey, each 2. Influenza is credited with 4 deaths at Manchester, no more than 2 in any other large town.

The number of stillbirths notified during the week was 275 (corresponding to a rate of 44 per 1000 births), including 36 in London.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Rear-Admiral G. L. Buckeridge, O.B.E., M.R.C.S., has been appointed Honorary Surgeon to the King from Sept. 22nd, 1935.

Surg. Rear-Admiral F. J. Gowans to *Drake* for R.N. Hosp., Plymouth, and as M.O. in charge.

Surg. Comdrs. M. Brown to *Victory* for R.N. Hosp., Haslar; and H. H. Babington to *Pembroke* for R.N.B.

MEDICAL NEWS

University of Cambridge

On Nov. 2nd Dr. John A. Ryle, regius professor of physic in the University, received the honorary degree of doctor of medicine. In presenting him the public orator said:

Adest vir eximius, qui, nepos Theologi nostri inter patres dilecti et ad episcopatum vocati, nomen antiquum ad Universitatem nostram reportat. Sed aliis se dedit studiis maluitque "scire potestates herbarum usumque medendi," et diu artem agitavit nec illam mutam nec ipse inglorius. *Agavephias* enim callidus investigator, stilo quoque insignis, quinque morbi typos vult distinguere, sive sedendo quis, ut Thescus, sive imaginando ventri suo contumelias iniuriasque imponit, sive cibis toxicato—sed quid plura? Morbos vestros nolo timoribus aggravare. Adest, a Rege nostro electus, ut alumnis nostris artis eiusdem amantibus praesident, immo ut disputando probet, antequam aliam mater diplomatis suis commendatō emittat in Britanniam aegrotantem. Londiniensis est; sed constat inter medicos, ut audio, saepe reddi et sanitatem transfuso sanguinis suis derivari passus est. Bis iam Facultas (ut nunc dicitur) Medicinae; sic reformatur Universitas. Speramus ergo, velut transfuso sanguine, sanari posse haec tanta vulnera, ipsique reddi salutem Medicinae. Illud enim sibi proponit ut Aesculapium colat promovendo scientiam.

The degree of M.A. was conferred, by special Graces, on Prof. Ryle and on Dr. G. P. McCullagh, university demonstrator in pathology. The following degrees were also conferred:—

M.D.—G. L. F. Rowell, R. S. Stacey, E. Fretson Skinner, and J. M. Wallace.

M.B. and B.Chir.—T. B. Jones.

M.B.—S. J. Hadfield, R. I. N. Greaves, and R. H. Brown.

Royal College of Physicians of London

At a quarterly meeting of the college held on Oct. 31st, with Lord Dawson of Penn, the president, in the chair, Dr. A. Ramsbottom, Dr. A. Foiling, Prof. O. L. V. S. de Wesselow, Prof. E. H. Kettle, Dr. R. H. Miller, and Dr. P. H. Manson-Bahr were elected councillors, and Dr. H. L. Tidy a representative on the committee of management of the Conjoint Board. The following representatives were elected: Dr. A. S. Barnes on the court of governors of the University of Birmingham; Dr. John Hay on the court of governors of the University of Liverpool; Sir Stanley Woodwork on the Central Council for District Nursing; and Dr. Arthur MacNalty on the executive committee of the Imperial Cancer Research Fund. Mr. Gavin Turnbull Simonds, K.C., was appointed senior standing counsel to the College.

The president announced the award of the Jenks scholarship to John Douglas James, late of Epsom College, and the appointment by the council of Dr. D'Arcy Hart to the Milroy lectureship for 1937. Dr. R. D. Gillespie was appointed a delegate to the fourth biennial conference on mental health in January, 1936.

The following candidates having satisfied the censors board were admitted to the membership:—

Franklin Blecknell, M.B. Oxon.; Thomas Colver, M.B. Sheff.; John Howard Fisher, M.B. Sydney.; Arthur Evans Francis, M.D. Lond.; George Edward Goidber, M.B. Oxon.; John Stuart Harper, M.B. Aberd.; William Albert Hawk, M.D. Toronto.; Thomas Shirley Hele, M.D. Camb.; John Locke Lovibond, M.B. Camb.; William McCartan, M.D. Belg.; James Robertson Monro Mackie, M.D. Aberd.; Robert Walsh Mussen, M.D. Belg.; Lionel Everard Napier, I.R.C.P.; Neville Christopher Oswald, M.B. Camb.; Mahankali Seetharama Rao, M.D. Madras.; Kenneth Moorhouse Robertson, M.D. Lond.; William Stuart Tezner, M.B. Oxon.; Samuel Edward Turvey, M.D. Manitoba.; John Henry Walters, I.R.C.P.; and Sydney Lawrence Wright, M.D. Lond.

Licences to practise were conferred upon 140 candidates (123 men and 17 women) who have passed the final examination of the Conjoint Board and have complied with the College by-laws. The following are the names and medical schools of the successful candidates:—

M. M. Ali, Omania and St. Bart.'s; I. C. Allen, Camb. and St. Thos.; W. G. R. Ashley-Emile, Middlesex; E. Aslan, Guy's; G. Bair, King's Coll.; Margaret Ball, Camb. and Royal Free; A. B. Barbour, St. Bart.'s; K. E. Barlow, Middlesex; J. E. B. Barnes, St. Mary's; H. H. F. Barnes, Univ. Coll.; P. B. Barnah, Calcutta and West Lond.; W. M. Beattie, Camb. and Liverp.; H. B. Birnbaum, Glasg.; L. J. Blay, Guy's; G. L. Broderick, Camb. and St. Thos.; J. A. B. Burnett, Charing Cross; W. A. Burnett, Camb. and Middlesex; A. Z. Butt, Witwatersrand and St. Bart.'s; T. D. Chabiani, Bombay and St. George's; Freda M. Chalkley, King's Coll. and West Lond.; S. L. S. Chiew, Singapore; Priecilla B. Clark and

E. R. Coleman, Univ. Coll.; J. D. Cooper, Camb. and Lond.; R. N. B. Criddle, Oxon. and St. Mary's; H. W. F. Croft, Liverp.; N. Cruickshank, Camb. and Lond.; M. K. Curlois, Guy's; B. Datta, Calcutta and Lond.; D. R. Davies, Cardiff; H. L. Ellis, Middlesex; G. A. Ewen, Camb. and St. Bart.'s; R. D. Ewing, Camb. and Middlesex; J. V. L. Farquhar, Camb. and St. Bart.'s; W. Fielding, Manch.; G. M. Fleming, Camb. and Univ. Coll.; Dalreen I. Forster, Royal Free; T. D. Fraser, Camb. and St. Thos.; E. D. B. Freedman, Univ. Coll. and Westminster; J. French, St. Bart.'s; S. E. Furber, Oxon. and St. Bart.'s; T. H. T. Gaultby, Camb. and Middlesex; P. R. Gavin, St. Thos.; S. G. Gordon, Charing Cross; D. W. F. Goffa, Lond.; A. A. Hakeem, Manch. and West Lond.; P. B. Hanbury, Guy's; C. W. M. Harvey, St. Thos.; B. B. Hickey, Oxon. and Lond.; G. S. Hodge, Univ. Coll.; G. A. Hodgson, Oxon. and St. Thos.; R. J. House, Middlesex; W. Hughes and T. G. Humby, Guy's; R. S. Hunt, Camb. and St. Bart.'s; C. A. Hutt, St. Mary's; R. A. Johnson, Guy's; D. Joy, Univ. Coll.; E. W. Knowles, Liverp.; J. W. Lacey, Camb. and Lond.; C. Langmaid, Cardiff; B. Lee, Manch.; D. N. Leeming, Guy's; J. I. Lesh, St. Thos.; W. N. Lippitt, Birm. and Lond.; H. S. Lohgarh, Punjab and Middlesex; R. G. M. Longridge, Camb. and St. Thos.; I. B. McCrue, Witwatersrand and Charing Cross; K. G. P. Mackenzie, Camb. and St. Thos.; Ivy M. Massick, Punjab and West Lond.; Dorothy V. Mazel, Sydney and Royal Free; S. C. Mehta, Ahmedabad and Lond.; H. C. de B. Milne, Camb. and Westminster; D. W. Moynagh, St. Bart.'s; A. Mukerji, Calcutta and Middlesex; R. Mundy, St. Bart.'s; A. H. G. Munro, Durh.; E. G. Murphy, Univ. Coll.; Maira Murray, Liverp.; A. A. K. Naqshbandi, Punjab and Lond.; S. G. Nardell, St. George's; J. A. V. Nicoll, St. Bart.'s; A. R. H. Oakley, Middlesex; T. D. W. O'Flynn, St. Mary's; C. W. F. Outred, Guy's; S. Paletz, St. George's; G. W. Palmer, Camb. and St. Thos.; Nora M. Pettitt, Royal Free; G. B. S. Plumlett, Westminster; Dorothy S. Pope, Royal Free; D. A. R. Pritchard, Liverp.; C. N. Pulvertaft, Camb. and St. Thos.; J. D. Raftery, St. Mary's; C. O. Ribello, Univ. Coll.; D. T. Richards, Cardiff; Florence G. Richards, Birm.; M. S. Richmond, Leeds; C. G. Rob, Camb. and St. Thos.; E. T. Roberts, Edin. and Leeds; J. M. Robins, Camb. and St. Bart.'s; G. S. Robinson, Camb. and Liverp.; H. D. H. Robinson, Univ. Coll.; P. A. Robinson, Camb. and Middlesex; G. Rogers, Lond.; O. N. Roussel, Camb. and St. Thos.; E. B. Rowe, Guy's; Millicent Rowland, Punjab and Royal Free; L. M. Rubelin, Lond.; A. E. K. Salvi, Guy's; H. N. Savage, Manch.; S. K. Sen, Patna and Birm.; J. A. Seymour-Jones, Camb. and St. Thos.; D. Singh, Lahore and Birm.; Marjorie Small, Adelaide and Royal Free; T. Smallhorn, St. Bart.'s; A. C. Spence, Camb. and Middlesex; S. Stein, Cape and St. Mary's; J. Stern, Lond.; L. D. Stone, Manch.; J. Suchet, Cape and St. Mary's; R. H. A. Swain, St. Bart.'s; J. R. Sweeting and Phyllis J. M. Sykes, Univ. Coll.; R. A. Thatcher, St. Mary's; F. B. Thomas, Camb. and St. Thos.; B. Thornley, Manch.; R. F. Tredgold, Camb. and Univ. Coll.; A. R. M. Wafar, Ceylon and King's Coll.; J. T. Walde, Guy's; Rosemary C. Walker, Royal Free; J. St. J. F. W. Wallace-Collett, Lond.; J. R. Wardley, Manch.; Norah E. Weatherhead, Royal Free; W. R. Welby, Lond.; D. O. Wharton, Camb. and Manch.; C. E. G. Wickham, St. Thos.; Sheila M. R. Williams, Royal Free; S. L. Williams, Cardiff; J. D. Wilson, St. Bart.'s; and Hilda C. Woods, Royal Free and West Lond.

Diplomas were conferred jointly with the Royal College of Surgeons as follows:—

Diploma in Public Health.—K. F. Alford, G. Busuttil, P. J. L. Capon, A. F. Cook, E. H. Hall, P. N. Kapur, A. A. Miller, C. D. Newman, and Constance L. Taylor.

Diploma in Child Health.—R. H. Bailey, D. S. Bateman, C. A. Brehl, A. M. R. Cunn, G. Davison, M. E. Diwany, J. H. Ebbs, L. A. Hawkins, B. McArdle, T. S. Rodgers, and A. B. Stokes.

University of Glasgow

On Nov. 2nd the degree of M.D. was conferred on W. S. Burnet.

University of St. Andrews

Mr. R. C. Alexander has been appointed to the chair of surgery in University College, Dundee, in succession to the late Prof. John Anderson.

Mr. Alexander was born in Edinburgh in 1884 and educated at George Watson's College. He studied medicine at the University of Edinburgh and in Paris, graduating M.B. Edin. with honours in 1908. He obtained a Vans Dunlop scholarship, and until the war he worked in Edinburgh, holding resident appointments at the Royal Infirmary and elsewhere. In 1911 he took the fellowship of the Royal College of Surgeons of Edinburgh, and in 1913 he was a joint holder of the Crichton research scholarship. During the war Mr. Alexander was surgical specialist attached to No. 3 Casualty Station of the Third Army in France. He held the rank of major in the R.A.M.C. and was twice mentioned in dispatches. After the war he returned to Edinburgh as assistant in the surgical department of the University until 1921, when he moved to Dundee. He was appointed hon. visiting surgeon to the Royal Infirmary there and lecturer in clinical surgery in the University of St. Andrews. In 1927 he was appointed examiner in operative surgery and surgical pathology to the Royal College of Surgeons of Edinburgh.

Hunterian Society

A meeting of this society will be held at the Cutlers' Hall, Warwick-lane, London, E.C., on Monday, Nov. 18th, at 9 P.M., when a discussion will be held on the motion that birth control is unnecessary in modern life. The opening speakers will be the Bishop of St. Albans, Dr. C. P. Blacker, Dr. Halliday Sutherland, and Dr. E. R. T. Clarkson.

British Institute of Philosophy

An address entitled *The Present Need of a Philosophy* will be given by Mr. C. E. M. Joad on Tuesday, Nov. 12th, at 8.15 P.M. at University College, Gower-street, London, W.C. Cards of application can be obtained from the director of studies at University Hall, 14, Gordon-square, W.C.1.

Aberdeen University Club, London

The ninety-fourth half-yearly dinner of this club will be held at the Café Royal at 7 for 7.30 P.M. on Thursday, Nov. 21st. Mr. J. M. Bulloch, LL.D., will preside, and General Sir Ian Hamilton will be the principal guest. The hon. secretary may be addressed at 16, Tregunter-road, S.W.10.

Medical Tour to the Mediterranean

The twelfth international medical tour, organised by the Société Médicale du Littoral Méditerranéen, will take place from Dec. 26th to Jan. 4th, and visits will be made to all the resorts of the French Riviera, from St. Raphaël to Mentone, as well as to the hinterland. Further particulars can be obtained from the French National Touring Office, 56, Haymarket, London, S.W.1.

Surgical Instrument Manufacturers' Association

The annual dinner of this association was held at the Holborn Restaurant on Oct. 25th, when Mr. H. Guy Drew (Down Bros.) presided. Prof. Grey Turner, who proposed "The Association," recalled his early delight in instruments of precision. The pride of the industry in its craftsmanship was something which should always be cherished. It added greatly to the interest of their work and could be passed on with the greatest possible advantage to their clients. He was indebted to instrument makers for the way they allowed surgeons to visit their workshops and see how the instruments were made. It would be beneficial, he thought, if a return visit was made to the surgeons' workshops, the operating theatres, to see what was actually done with the instruments. The association might also with advantage form some sort of museum where the vast stocks of patterns of surgical instruments could be housed and to which those who were thinking of inventing instruments could have access. It might often be found that the instruments they had in mind had already been produced and perfected years before! Mr. Drew, who responded, said that skilfully designed surgical instruments had the happy knack of turning up again and again; it was essential for them to be known by the name of the most recent inventor when they embodied improvements on the original design. Heister, who was born in Frankfurt about 1683, wrote a book on surgery which ran into seven German editions and was adopted for many years as the standard book on surgery in the British army; some of his instruments were still being produced, but were not catalogued under his name. Prof. Turner, he said, was voicing their own ideas in saying that the technician of the future must be much more highly trained than he had been in the past. They had recently formed an institute where it was intended to train the young people who were joining the industry in the basic fields of knowledge where surgeon and instrument maker came into contact. Dr. A. N. Gardner proposed "The Guests," and in responding Sir Frederick Hobday expressed his indebtedness to the industry for collaboration in alleviating the sufferings of animals. Dr. Charles Hill, who also responded, urged the institute to seek admission to the register of auxiliaries compiled by the British Medical Association. Mr. Richard Say, on behalf of the Hospital Saving Association, expressed his appreciation of the good work which the instrument makers were doing in endeavouring to raise the quality of surgical appliances and in protecting the public from the quack advertiser.

The King has given permission to Dr. William Dunlop, lately chief medical officer in the Iraq health service, and Mr. G. S. Woodman, lately chief surgical specialist in the service, to wear the order of Al Rafidain, insignia of the fourth class (civil division), which has been conferred on them by the King of Iraq in recognition of their valuable services to his country.

Manchester Babies' Hospital

The Duchess of York has given permission for this hospital to change its name to the Duchess of York Hospital for Babies in Manchester. The hospital celebrated its twenty-first anniversary this year, and Her Royal Highness visited it last July when she opened the new nurses' home and medical block.

Hull Royal Infirmary

The board of management of this hospital have decided to proceed with a scheme for a new block at Sutton for paying patients. There will be an appeal for funds, but the contributions will be regarded as loans carrying interest. Under its charter the infirmary cannot itself carry this out, and the appeal will probably have to be undertaken by an independent body.

University of Birmingham

A special post-graduate course in neurology for candidates preparing for the diploma in psychological medicine of the conjoint board will be held from May 5th to July 14th on Tuesday afternoons at the General Hospital, the Queen's Hospital, and the Cripples Hospital. The lecturers will be Mr. Beatson Hird (neurological ophthalmology), Prof. P. C. Cloake (neurology), Dr. Keith Thompson (neuro-pathology), Mr. G. P. Mills (neurological orthopaedics), and Dr. J. F. Brailsford (radiology of the nervous system). Further particulars may be had from the secretary of the University.

Cleaner Swimming Pools

The Minister of Health has been drawing the attention of local authorities to the necessity for cleanliness in swimming-pools. The official circular (No. 1503) points out that the coming of winter provides an opportunity for ensuring that suitable standards of cleanliness and purity of water are maintained. The report on the Purification of the water of Swimming Baths, published by the Ministry in 1929, is quoted as recommending continuous filtration combined with continuous and accurately controlled chlorination (or other equally effective means of sterilisation). Besides baths and pools in public ownership there are those provided by private owners (e.g., in connexion with road-houses and similar premises), and the circular indicates the statutory powers of control which local authorities can exercise, if need be, over such pools used by the public.

The Irish Free State Medical Union

Our Irish correspondent writes: At the representative meeting of the British Medical Association last July sanction was given to a proposal for the union of the branches of the B.M.A. in the Free State with the Irish Medical Association. The latter body, which had previously given approval of the project, has now passed the necessary legal resolutions for winding-up. Two special general meetings were held on Oct. 16th and 31st, and decisions taken in legal form. It is expected that the new union—the title of which will be "the Irish Free State Medical Union (Irish Medical Association and British Medical Association)"—will come into being on Jan. 1st, 1936. All the members of both associations who are resident in the area under the jurisdiction of the Irish Free State will automatically become the first members. The Union will have complete autonomy within the Irish Free State, but arrangements have been made by which the members will receive the *British Medical Journal*, and the Union will be represented on the council of the Association. Moreover, a member leaving the Irish Free State to reside in Great Britain or in any other area where there is a branch of the B.M.A. will automatically become a member of that association. Conversely, members of the B.M.A. coming from Great Britain or elsewhere will become members of the Union. The first election of officers and committees will take place next summer, the management of the Union in the meantime being by a provisional committee.

OBITUARY

WILLIAM ADAMS FROST, F.R.C.S. Eng.

CONSULTING OPHTHALMIC SURGEON TO ST. GEORGE'S HOSPITAL.

The death of Mr. Adams Frost at 82 years of age marks a breach with the past. Forty years ago he was the best known of British ophthalmologists; he was an original member of the Ophthalmological Society of the United Kingdom and the last survivor in this country of that little group. For many years he had been living in retirement.

William Adams Frost was educated at Kensington Grammar School. His father, Charles Maynard Frost, F.R.C.S., was a London Hospital man, but he was surgeon to the Kensington Dispensary and lived in Ladbroke-square, from which it was a pleasant walk across the park to St. George's, where the son studied medicine and from which he qualified in 1874, becoming house surgeon and demonstrator of anatomy. After post-graduate study in Vienna he took his F.R.C.S. in 1878, and three years later was appointed assistant ophthalmic surgeon to the hospital. In 1892 he succeeded Mr. Brudenell Carter as full surgeon, and remained on the active staff until his retirement in 1906. For much of this time he was also surgeon to the Royal Westminster Ophthalmic Hospital, and ophthalmic surgeon to the Victoria Hospital for Children. At St. George's he lectured on ophthalmic surgery, and he was tireless in giving elementary instruction to students who had no intention of becoming specialists; at the Westminster he made good use of a collection of lantern slides (taken from his atlas) to ground more advanced pupils in the recognition of the normal and abnormal fundus picture. He did not write much but his "Atlas of the Fundus Oculi," which appeared in 1896, was an important contribution to ophthalmic literature; some attempts had previously been made in this direction, but Frost's early training at Moorfields and his later attachment to large ophthalmic hospitals gave him the opportunity of capturing topical and interesting cases at the right moment, and of supervising the artist in order that the essential points might be effectively brought out. The atlas contained all the important forms of disease which the student or practitioner was likely to meet with, and Mr. Frost was happy in his artist, Mr. A. W. Head, whose drawings bore the impress of fidelity. His other publication was a little manual of ophthalmic surgery in which he collaborated with Brudenell Carter, who took the anatomy and physiology, while Frost discussed the diseases of the eye and its setting. The chief value of this book lay in the sections on the refraction of the eye and the correction of errors of refraction which Mr. Frost was one of the first to make clear to the student. He devised a useful artificial eye for the purpose of teaching the use of the ophthalmoscope to students, and his model of ophthalmoscope was in some ways superior to Morton's. The operation of putting a glass globe into Tenon's capsule, after excision of the eye, still bears his name. At the Ophthalmological Society he was twice awarded the *Middlemore* prize; he was for many years librarian of the Bowman library and vice-president of the society.

Mr. Harold Grimsdale writes: "It was my privilege to be associated with Mr. Frost, as clinical assistant and later as assistant surgeon for many years both at St. George's and at the Royal Westminster. It is not easy to express the great regard I had for him; he was an ideal colleague, always ready to

help and to listen to one's difficulties. He criticised but never unkindly. His most marked characteristic was keenness; whatever he took up he enjoyed to the full. Apart from his work, which he loved, he played hard. As a young man he was an enthusiastic cyclist; when motors came in he became an equally enthusiastic motorist. He hunted, played golf and bridge, always putting his whole heart into the matter in hand. In his last years his sight failed, and he who had done so much to help the sight of others himself slowly became blind; but even this tragedy he met courageously. He came constantly to the committee meetings of the Westminster, and by his wise advice and interest did much to make the hospital flourish."

In January, 1881, Mr. Frost married Miss M. D. Anderson, who survives him. There were no children of the marriage.

**WILLIAM ARTHUR WINTER, M.D. Dub.,
F.R.C.P. Irel.**

Dr. Winter's death in Dublin last Saturday was unexpected to his friends, few of whom knew that he was not in sound health. He was a Dublin man by birth, being born in the city in 1868, and was educated at Trinity College, Dublin. After graduating in 1891 he was for a few years engaged in general practice in the north of England, after which he returned to Dublin to practise as a physician. He was for some years assistant physician to Dr. Steevens' Hospital, and in 1906 was elected visiting physician to that hospital, a post he held up to his death. He filled various offices in the Royal College of Physicians, and was its president from 1927 to 1930. During the late war he served for a time with the "83 (Dublin) General Hospital" in France, holding the rank of major in the Royal Army Medical Corps.

A careful and conscientious hospital physician, Winter for many years enjoyed a large private practice chiefly of the family type; it was a tribute both to his skill and to his kindness that he retained his earlier patients through life, and very often their children and grandchildren became his patients also. He was so unassuming that his capacity and dignity as president of the College exceeded the anticipations even of his friends. Only a few weeks ago he proposed the toast of the guests at the St. Luke's Day dinner with neatness, good feeling, and tact. A very "clubbable" man and a bachelor he was held in general affection, his courtesy and willingness to do a favour being patent to all.

SIR THEMISTOKLES ZAMMIT, C.M.G., M.D.

THE death in Malta on Nov. 3rd of Sir Themistokles Zammit, at the age of 72, removes from his native island a wise counsellor who, holding himself aloof from purely party politics, has left a deep impress upon its sociological and academic life; from the world of scientific investigation an outstanding personality; and from a smaller circle, to which he was familiarly known as Tem or Temmy, a loyal and beloved friend.

Born in 1864, Zammit was educated at the Malta University where he pursued the study of medicine, and in due course graduated M.D. in 1889. Attracted by the possibility of devoting himself to analytical chemistry, he applied for, and was appointed in 1891 to, the post of government analyst, which he

held for 30 years. He took up his work in the laboratories of the Public Health Department under the then chief medical officer, Caruana Scicluna, who had himself helped Bruce in his preliminary investigations into the aetiology of Mediterranean fever. At this moment, Captain Hughes, who followed Bruce in the serious study of this disease, stepped into the laboratory, and in his turn received much assistance in his researches from Zammit. From the earliest stages of his government service, Zammit was thus in close touch with the development of our knowledge of undulant fever, a fact which made him a tower of strength to the Mediterranean Fever Commission from 1904 to 1907. The discovery of the elimination of the specific micro-organism of the disease via the milk of the goat was due to him—and

the study of means for the prevention of brucella infections afforded him intermittent occupation throughout his life. His numerous publications on the subject are scattered through English, French, and Italian journals; and a note from his pen on the immunisation of the Maltese goat appeared in our own columns only two years ago. Previously to the advent of the Mediterranean Fever Commission



SIR THEMISTOKLES ZAMMIT

he had already made his mark in the investigation of an outbreak of malaria in Malta, which he successfully dealt with by tracing the anopheles to its only habitat in the island—a small but deep valley—and there destroying it.

For a period of 25 years Zammit played a very active part in university life. In 1905 he was appointed to the chair of chemistry—a post which he retained until 1920—when he exchanged it for the rectorship of the university, becoming at the same time a member of the Legislative and of the Executive Councils of Malta. These posts he held until 1926, when on retiring from the rectorship he was appointed director of the museum department, and was enabled to give free rein to his antiquarian pursuits. Honours naturally fell to his share. In 1911 he became C.M.G.; in 1919 he received the hon. fellowship of the Royal Anthropological Institute; in 1920 the University of Oxford conferred upon him the degree of D.Litt. (hon. causa); in the same year he was awarded the Mary Kingsley medal of the Liverpool School of Tropical Medicine; and ten years later he was created a knight.

Zammit was indeed a versatile and many-sided person, and whatever study he turned to has been enriched by his work. He was a patient, exact, and logical scientific worker, an erudite archaeologist, and an academic dignitary whose sound judgment and logical mind steered the university through many troublous times.

He leaves one son—assistant curator of the museum—and one daughter.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Nov. 12th.

Therapeutics and Pharmacology. 5 P.M. Prof. E. C. Dodds: The Pharmacological Action and Clinical Use of Drugs with a Camphor- and Coramine-like Action.

Psychiatry. 8.30 P.M. Dr. John Brander: The Study of the Human Pituitary in Health and Disease.

WEDNESDAY.
Surgery: Sub-section of Proctology. 5 P.M. Mr. G. Gordon-Taylor: The Complex and Complicated in the Surgery of the Large Intestine (presidential address).

FRIDAY.

Radiology. 8 P.M. for 8.15 P.M. (British Industries House, Marble Arch, W.). Dr. Allibone: Continuously Evacuated X Ray Tubes. Other speakers: Dr. Ralston Paterson, Dr. F. Ellis, and Dr. N. S. Finzi.

Epidemiology and Tropical Diseases. 8.15 P.M. Sir W. Dalrymple-Champneys, Dr. R. Briercliffe, Dr. T. B. Wigglesworth, and Dr. P. H. Manson-Bahr: The Malaria Epidemic in Ceylon, 1934-35 (joint discussion).

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
MONDAY, Nov. 11th.—8 P.M., Clinical Evening.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.

THURSDAY, Nov. 14th.—8.30 P.M. (at 11, Chandos-street, W.), Dr. J. A. Hadfield: A Contribution to Psychopathology.

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY, Royal Northern Hospital, N.W.

FRIDAY Nov. 15th.—9 P.M., Clinical Evening.

SOUTH-WEST LONDON MEDICAL SOCIETY.

WEDNESDAY, Nov. 13th.—9 P.M. (Bolingbroke Hospital, Bolingbroke-grove, S.W.), Mr. E. T. C. Milligan: Modern Methods and Treatment of Ano-rectal Diseases.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, Nov. 12th.—9 P.M. (Great Western Royal Hotel, W.), Miss M. J. Roxburgh, Miss E. Wetherall, and Miss D. Anderson: Hospital Almoners and the Medical Practitioner.

BIOCHEMICAL SOCIETY.

FRIDAY, Nov. 15th.—4.30 P.M. (Guy's Hospital medical school, S.E.), Short Communications.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION, 11, Chandos-street, W.

FRIDAY, Nov. 15th.—5 P.M. Mr. E. Wilson Hall: Some Problems of the Medical Officer in Private Preparatory Schools.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

TUESDAY, Nov. 12th.—5 P.M., Dr. J. D. Rolleston: The History of the Acute Exanthemata (last FitzPatrick lecture).

THURSDAY.—5 P.M., Dr. C. G. Seligman, F.R.S.: The Roman Orient and the Far East (Lloyd-Roberts lecture).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.1.

MONDAY, Nov. 11th to SATURDAY, Nov. 16th. Wed., 8.30 P.M. (1, Wimpole-street, W.), Dame Janet Campbell, Prof. J. M. Munro Kerr, Prof. G. I. Strachan, and Prof. Daniel Douglass: That the present rate of maternal mortality is a discredit for modern obstetrics (open to all members of the medical profession).—

INFANTS' HOSPITAL, Vincent-square, S.W. Mon., Wed., and Fri., 8 P.M., Course for the F.R.C.S. (Primary) in anatomy and physiology.—ST. PETER'S HOSPITAL, Henrietta-street, W.C. All-day course in urology.—

ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. All-day course in medicine, surgery, and gynaecology.—Courses and lectures open only to members of the Fellowship.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Nov. 11th.—3.30 P.M., Dr. Symonds: Intracranial Pressure.

TUESDAY.—3.30 P.M., Dr. Critchley: Epilepsy and Allied Conditions.

WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. Walshe: The Motor System (I.).

FRIDAY.—3.30 P.M., Dr. Bernard Hart: The Psychoneuroses (VI.).

Out-patient clinic daily at 2 P.M.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Nov. 14th.—2 P.M., Mr. A. Simpson Smith: Clinical Cases. 3 P.M., Dr. W. W. Payne: Diabetes (Part III.), Complications and their Treatment.

Out-patient Clinics daily at 10 A.M. and ward visits (except on Wednesdays) at 2 P.M.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE EAR, NOSE, THROAT, AND CHEST, Hardman-street, Deansgate, Manchester.

WEDNESDAY, Nov. 13th.—4.30 P.M., Dr. Vernon Smith: Nasal Polypi.

ST. PAUL'S HOSPITAL, Endeell-street, W.C.

WEDNESDAY, Nov. 13th.—4.30 P.M., Mr. Stanford Cade: Radiation in Cancer of the Urinary Tract.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.

WEDNESDAY, Nov. 13th.—4 P.M., Mr. H. Lawson Whale: Fads and Fancies in Laryngology.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Nov. 11th.—10 A.M., Medical wards and skin clinic. 11 A.M., Surgical wards. 2 P.M., Surgical and gynaecological wards, eye, and gynaecological clinics. 4.15 P.M., Mr. Green-Armytage: Trial Labour versus Induction.

TUESDAY.—10 A.M., Medical wards. 11 A.M., Surgical wards. 2 P.M., Throat clinic. 4.15 P.M., Dr. Owen: Hemorrhage and Jaundice.

WEDNESDAY, 10 A.M.—Children's ward and clinic. 11 A.M., Medical wards. 2 P.M., Eye clinic. 4.15 P.M., Demonstration of eye cases.

THURSDAY.—10 A.M., Neurological and gynaecological clinics. Noon, Fracture clinic. 2 P.M., Eye and genito-urinary clinics.

FRIDAY.—10 A.M., Skin clinic. 2 P.M., Throat clinic. 4.15 P.M., Mr. Vlasto: Pain in the Ear.

SATURDAY.—10 A.M., Medical wards, children's and surgical clinics.

The lectures at 4.15 P.M. are open to all medical practitioners without fee. Operations, medical and surgical clinics daily at 2 P.M.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

WEDNESDAY, Nov. 13th.—4 P.M. (St. James' Hospital, Ouseley-road, S.W.), Dr. G. Braun: Dr. Lettermann's Foot Corrective System, a biological method.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.

THURSDAY, Nov. 14th.—9 P.M., Mr. St. J. D. Buxton: Tubercle of Bones and Joints.

ROYAL SANITARY INSTITUTE, 90, Buckingham Palace-road, S.W.

TUESDAY, Nov. 12th.—5.30 P.M., Dr. M. T. Morgan: Health Inspection of Meat and Meat Products destined for export in the great abattoirs of South America (Benjamin Ward Richardson lecture).

ST. JOHN CLINIC, Ranelagh-road, S.W.

FRIDAY, Nov. 15th.—4.30 P.M., Dr. Albert Eidinow: Principles of Local and General Light Therapy.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Nov. 13th.—3.30 P.M., Mr. William Ibbotson: Hygiene of Breathing, Hearing, and Speaking.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.

TUESDAY, Nov. 12th.—5 P.M., Dr. H. MacCormac: Malignant Growths of the Skin.

WEDNESDAY.—5 P.M., Dr. I. Muende: Histopathology of Chronic Granulomatata.

THURSDAY.—5 P.M., Dr. Hugh Gordon: Cutaneous Affections due to Sunlight.

UNIVERSITY OF SHEFFIELD.

FRIDAY, Nov. 15th.—3 P.M. (Royal Hospital), Dr. C. Gray Imrie: Medical Cases. 3 P.M. (Royal Infirmary), Dr. A. Gurney Yates: Medical Cases. 3 P.M. (Jessop Hospital), Prof. John Chisholm: Gynaecological Cases.

SUNDAY.—10.30 A.M. (Royal Hospital), Dr. C. Gray Imrie: Medical Cases. 10.30 A.M. (Royal Infirmary), Dr. A. Gurney Yates: Medical Cases. Mr. R. St. L. Brockman: Surgical Cases. 10.30 A.M. (Jessop Hospital), Mr. Eric Stacey: Gynaecological Cases.

GENERAL INFIRMARY, Leeds.

TUESDAY, Nov. 12th.—3.30 P.M., Mr. Foster: Epiphora: cases illustrating causation and treatment.

PUBLIC DISPENSARY AND HOSPITAL, Leeds.

WEDNESDAY, Nov. 13th.—4 P.M., Dr. H. H. Moll: Emphysema.

ROYAL INFIRMARY, Manchester.

TUESDAY, Nov. 12th.—4.15 P.M., Mr. D. M. Sutherland: Abdominal Injuries.

FRIDAY.—4.15 P.M., Dr. T. H. Oliver: Demonstration of Medical Cases.

ST. MARY'S HOSPITALS, Manchester.

THURSDAY, Nov. 14th.—4.15 P.M. (Whitworth-street West Hospital), Mr. Arnold Jones: The Present Position of the Operation for the Removal of Tonsils and Adenoids.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

WEDNESDAY, Nov. 13th.—4.15 P.M. (Royal Infirmary), Prof. J. A. G. Burton: The Acute Abdomen.

Buxton Clinic for Rheumatism and Allied Diseases.—H.P. At rate of £150.

Cambridge, Addenbrooke's Hospital.—H.P. At rate of £130.

Cancer Hospital, Fulham-road, S.W.—Res. M.O. £200. Med. Reg. £150. Also H.S. At rate of £100.

Carshalton, Surrey, Queen Mary's Hospital for Children.—H.P.

At rate of £120.

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S.

At rate of £100.

Chester City and County of.—Deputy M.O.H., &c. £500.

City of London Hospital for Diseases of the Heart and Lungs,

Victoria Park, E.—Walton Marsh Barnes Research Scholarship, &c. £500.

Constance-road Institution, East Dulwich, S.E.—Asst. M.O. £230.

Croydon General Hospital.—Res. M.O. £200.

Dreadnought Hospital, Greenwich, S.E.—Receiving Room

Officer. At rate of £200.

Edinburgh, National Committee for the Training of Teachers.—

M.O. and Lecturer on Hygiene for Aberdeen Training

Centre. £725.

Egyptian Government.—Principal M.O.H. of Cairo. L.E. \$40-

984. Also Director, Serum and Vaccine Institute, Cairo.

L.E. \$40-984.

Fulham Hospital, St. Dunstan's-road, W.—Asst. M.O. £250.

Golden-square Throat, Nose, and Ear Hospital, W.—H.S. £100.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Hospital for Sick Children, Great Ormond-street, W.C.—Res.

M.O. for Country Branch. At rate of £250. Also Res.

Anæsthetic Registrar. At rate of £150.

Hospital for Women, Soho-square, W.—Surgeon in Charge of

Out-patients.

Hull Royal Infirmary.—Cas. O. At rate of £150.

Jersey General Hospital and Poor Law Infirmary.—Radiologist.

£500.

Leicester, City General Hospital.—Deputy Med. Supt. £500.

Leeds City.—Asst. Clin. Tuberc. O. £550.

Leeds, Menston Mental Hospital.—Fifth Asst. M.O. £350.

Liverpool Hospital for Consumption and Diseases of Chest,

Mount Pleasant.—Hon. Asst. Physician.

Manchester, Ancoats Hospital.—H.S. to Ear, Nose, and Throat

Dept. At rate of £100.

Manchester City.—Asst. Tuberc. O. £650.

Manchester Northern Hospital, Cheetham Hill-road.—Res. M.O.

£150.

Metropolitan.—Hon. Asst. Surgeon.

Miller Ge.—M.O. £250.

Miller Ge.—S.E.—Cas. O. At

rate of £150. Also H.P. and H.S. Each at rate of £100.

Newark General Hospital.—Res. H.S. £175.

New End Hospital, Hampstead, N.W.—Asst. M.O. £250.

Northampton General Hospital.—H.S. At rate of £150.

Norwich, Norfolk and Norwich Hospital.—Cas. O. £120.

Nottingham Children's Hospital.—Res. H.P. At rate of £150.

Nottingham City Hospital.—Res. Surg. O. £350. Also two

H.S.'s. Each at rate of £150.

Preston, Biddulph Grange Orthopaedic Hospital.—Jun. H.S. At

rate of £150.

Princess Elizabeth of York for Children, Shadwell, E.—Res. M.O.

£200.

Romford, Oldchurch Hospital.—Jun. Res. M.O. £250.

Royal College of Physicians, Pall Mall East, S.W.—Leverhulme

Research Scholarship. £500.

Royal Free Hospital and London School of Medicine for Women,

Hunter-street, W.C.—Third Res. Asst. £270. Also Res.

Asst. Path. £150. Also Anæsthetist Registrar. £100.

Royal Northern Hospital, Holloway, N.—Second Ophth. Surgeon.

Royal Waterloo Hospital for Children and Women, Waterloo-

road, S.E.—H.S. At rate of £100.

St. Mary, Islington, Hospital, Highgate Hill, N.—Asst. M.O.

£350.

St. Pancras Hospital, Pancras-road, N.W.—Asst. M.O. £250.

Salisbury General Infirmary.—Res. M.O. £250.

Salvation Army, Mothers' Hospital, Lower Clapton-road, E.—

Sen. Res. M.O. £150. Also Jun. Res. M.O. At rate

of £80.

Sheffield, Jessop Hospital for Women.—H.S. At rate of £100.

Southampton, Royal South Hants and Southampton Hospital.—

H.P. Cas. O. Also H.S. to E.N.T. Dept. and Res. Anæ-

sthetist. Each at rate of £150.

Stafford, Slandon Hall Orthopaedic Hospital.—H.S. £200.

Sunderland Royal Infirmary.—H.S. and H.P. Each at rate

of £120.

Swansea General and Eye Hospital.—Cas. O. At rate of £150-

£175.

Talgarth, Breconshire, South Wales Sanatorium.—Asst. Res.

M.O. £200.

Taunton and Somerset Hospital.—H.P. and H.S. Each at

rate of £100.

Tunbridge Wells, Kent and Sussex Hospital.—Res. Surg. O.

£250.

Walsall, Manor Hospital.—Asst. M.O. £350.

West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—

Registrar. £200. Also two Hon. Med. Psychologists.

West London Hospital, Hammersmith-road, W.—Physician to

X Ray (Therapeutic) and Electrical Depts.

Wimbledon Hospital, Thurstan-road, S.W.—Res. M.O. At rate

of £150.

Winchester, Royal Hampshire County Hospital.—H.S. At rate

of £125.

Wokingham, Berks, Pinecroft Sanatorium.—Asst. M.O. £250.

Wolverhampton, New Cross Hospital.—Asst. Res. M.O. £200.

Woolrich and District War Memorial Hospital, Shooters Hill,

S.E.—Two H.S.'s. Each at rate of £100.

Worcester Royal Infirmary.—Hon. Anæsthetist.

York County Hospital.—H.S. to Eye, Ear, Nose, and Throat

Dept. Also H.P. Each £150.

The Chief Inspector of Factories announces a vacancy for a

Certifying Factory Surgeon at Kel-o (Roxburgh).

Vacancies

For further information refer to the advertisement columns Adelaide, South Australia, University and Hospital.—Director of Bacteriology and Pathology.

Assam, India, Welch Presbyterian Mission Hospital, Shillong.—Surgeon.

Babies' Club, Chelsea.—Additional M.O. £1 11s. 6d.

Barnstaple, North Devon Infirmary.—Res. M.O. At rate of £150.

Bath, Royal United Hospital.—Asst. Hon. M.O. to Physio-

Therapy Dept.

Birmingham, Queen's Hospital.—Res. Surg. O. £150.

Bovey Tracey, Hawkmoor Tuberculosis Sanatorium.—Res. M.O.

£250.

Brentwood, Essex, High Wood Hospital for Children.—Asst. M.O.

£250. Also H.P. At rate of £120.

Brighton, New Sussex Hospital for Women, Windlesham-road.—

Hon. Asst. Ophth. Surg. Also H.P. £100.

NOTES, COMMENTS, AND ABSTRACTS

THE VACCINATION QUESTION

In a Chadwick lecture given in London on Nov. 1st Dr. C. Killick Millard, late medical officer of health for Leicester, sought common ground in which opponents and supporters of vaccination may bury their differences. In the past, he said, one either had to believe in vaccination or disbelieve in it, and the result had been a contest of extremes. While his own faith in vaccination, as a means for protecting the individual against small-pox, was as strong and unassailable as ever, he recognised that, as a State institution, for protecting the community, infant vaccination had been largely a failure. The case of this country in 1871-2, and of India to-day, were outstanding illustrations of this. It was lack of sanitation, not of vaccination, which was the true cause of the appalling small-pox mortality which persisted in India. He believed that the medical profession, from Jenner onward, had claimed too much for vaccination, and that vaccination had been credited with having reduced small-pox mortality in this country much more than it had really done. To-day this was being recognised by the medical profession, or at least by medical officers of health, and it could hardly be otherwise, for in spite of continuous and increasing neglect of infant vaccination small-pox mortality had almost disappeared. Until a few years ago it was taught as a cardinal medical dogma that the neglect of infant vaccination entailed serious and imminent risk of small-pox mortality returning. But the city of Leicester had openly abandoned infant vaccination 50 years ago, and there had only been two deaths from small-pox there in the last 30 years. Dr. Millard took the view that the "ultra-mild" form of small-pox seen in this country of late years is a distinct variety which breeds true. This "variola minor" presents quite a different administrative problem from variola major; it is non-fatal, non-disfiguring, non-loathsome. In some ways it is no more serious than vaccination, and no case, he thinks, can be made out for retaining compulsory vaccination merely on account of it. In Dr. Millard's opinion the repeal of the Vaccination Acts is now overdue.

THE LIMITATIONS OF RADIODIAGNOSIS

THE warning that the radiological method is the servant and not the master of the physician is no new one, but Dr. H. A. Christian¹ has illustrated it aptly with some interesting examples of diagnostic difficulties. Severe and persistent backache, for instance, may suggest to the clinician osteoarthritis of the spine or new growth of the vertebrae. The radiologist may report that there is no evidence of new growth or that there is evidence of osteoarthritis, yet neither report is sufficient justification for abandoning a strong clinical suspicion that new growth is present. Pleural fluid, recurring in the absence of cardiac insufficiency, is a very important sign of new growth in the absence of any local X ray evidence. Prolonged fever again may be the only sign of new growth at some time. Often enough indeed, Dr. Christian points out, the X ray diagnosis lags behind the clinical. In abscess of the lung, for example, there may be fever, foul sputum, and physical signs several days before the X ray is able to reveal the abscess cavity with fluid level, because in the earlier stage the cavity is filled with exudate similar to that in the surrounding lung tissue and no contrast is perceptible. There is a similar lag in osteomyelitis and mastoiditis, and the consequences of waiting for X ray confirmation may be very grave. Tubercle bacilli may be found before a radioscopic lesion is present, just as in other cases the X ray may reveal an unsuspected tuberculosis. The wise

physician needs no warning of this lag, but there may be practitioners who expect too much from and place far too much reliance on the X ray contribution to the problem of diagnosis.

SMOKE AND THE NATIONAL OUTLOOK

SPEAKING on this subject at a conference held recently in Peterborough, Dr. R. Veitch Clark, medical officer of health for Manchester, said that the unnecessary production of smoke in this country has far-reaching disadvantages to the nation, not only the rough serious damage to physical and mental well-being, but in waste of fuel resources, increased cost of maintenance of buildings, and harm to agriculture. Possibly, however, the atmospheric gloom and dirt associated with smoke, by its influence on the mind, was most damaging of all in its reaction on national movements and national life. Experience showed, Dr. Clark said, that only in the larger areas of local government was smoke control even reasonably possible, and the smoke nuisance should therefore be administratively supervised by joint smoke boards, operating as do river boards, and covering an area large enough to make effective standardisation of smoke emission generally practicable. Such a board would be able to maintain a staff capable of meeting and discussing problems of fuel consumption, both with industrialists and with local authorities responsible for housing and the production of domestic smoke. This coöperative effort would do far more good than any penal legal enactments.

BOMBAY 100 YEARS AGO

Sir Edward West, appointed recorder of Bombay by the Crown in 1822, and afterwards chief justice, set about the reform of the law courts. With no support from the Governor, and met by antagonism from the supreme court and the East India Company's advocates, he pursued his single-minded fight for justice, and became so much beloved by the natives that at his death Hindus, Mohammedans, and Parsees all contributed to found a scholarship in his honour. He was the first judge to sit with a jury which included natives. Dr. F. D. Drewitt has collected and edited his memoirs which now appear in a revised edition² including some hitherto unpublished letters from Archdeacon Barnes who accompanied Bishop Heber in Bombay. Dr. Drewitt has a pleasing straightforward style of writing and the addition of passages from Lady West's journal adds to the interest of the book.

A DOCTOR ON SWIMMING

Dr. G. B. Brewster has made eight attempts to swim the Channel. He has described them in a little book³ which also contains some notes on the health value of swimming and on training for long swims. Written with a naïveté which is by turns charming and irritating, the book reveals a tenacity in the face of difficulties and bad luck worthy, perhaps, of a better cause. To those who are familiar only with the more usual methods of crossing to the Continent, the chief surprise will be the very few days in every year—half a dozen or so—in which an attempt can be made to swim the Channel, and it is no wonder that on those days the beach at Dover should be thick with swimmers and that the boats available to accompany them should "fall to the longest purse." One fact revealed by Dr. Brewster may discourage even the patient and wealthy long distance swimmer: he may be just as sea-sick as on a cross-channel steamer.

¹ Bombay in the Days of George IV. Second edition. By F. Dawtrey Drewitt, M.D., F.R.C.P. London: Longmans, Green and Co., Ltd. 1935. Pp. 342. 10s. 6d.

² My Channel Swimming Adventures. By G. B. Brewster, M.B., Ch.B. London: John Bale, Sons and Danielsson Ltd. 1935. Pp. 71. 2s. 6d.

³ New Eng. Jour. Med., Sept. 26th, 1935, p. 593.

SOCIAL SURVEYS

AN inquiry into the aims and scope of British local social surveys, undertaken in order to judge whether or not further surveys should be encouraged, has had as its outcome an informative little book¹ on the local social survey in Great Britain. The author distinguishes between "typical" surveys in which various social conditions (in particular the extent and causes of poverty) are examined in one area as a sample of conditions in the country as a whole, and "regional" and "community" surveys in which stress is laid on the special problems of the area under consideration and an attempt is made to educate local public opinion to tackle these problems. Mr. Wells concludes that the survey has been definitely successful, both in ascertaining facts and in stimulating to activity. He recommends that further survey work should be done particularly in rural areas, and on aspects of social life not already dealt with. It is doubtful whether this book would be very illuminating to a reader unacquainted with any actual survey, but if it sends such a reader to study the surveys themselves that is all to the good. A useful bibliography lists 31 general social surveys, ranging in time from Charles Booth's classical work on London down to the Merseyside and other recent surveys, and also 124 surveys dealing with special topics.

AIR-RAID PRECAUTIONS

SINCE it seems still necessary that the "active" part of the population must spend time and energy in devising schemes for preventing the "passive" part of the population from being blistered, burnt, and asphyxiated from the air, a catechism on gas warfare recently published serves a necessary purpose.² Major Hammer answers in clear and simple language questions on the properties of the various poison gases; on protection and decontamination, both personal and collective; on the first-aid treatment and nursing of gas casualties; and on the organisation necessary in an air raid. Two appendices deal respectively with respirator drill and the administration of oxygen, and some blank pages are added for notes—or perhaps for a Last Will and Testament. Without diagrams and fuller explanations or practical demonstrations the book is not complete in itself, but to refresh or clarify the mind of an intelligent civilian who has been through a course of air-raid precautions and first aid for gas casualties it should prove most useful. To instructors and medical men generally it will serve as a reminder of many points easily forgotten. No criticisms of the matter are called for, but in connexion with face wounds and respirators the sentence "care must be taken that padding or bandages do not cause a bad fit" is open to misinterpretation, as is the horrible phrase a "pussy" discharge."

A USEFUL DIET BOOK

A NOTE from the printers informs us that this diet book³ has been compiled by Dr. H. S. Pemberton, honorary physician to the David Lewis Northern Hospital, Liverpool, and the preface tells us that the diets and tables contained in it have been used for some years in the wards and dietetic clinic of that hospital. The work appears in such a modest form and the diets are printed with such complete absence of explanatory paragraphs that its essential excellence may be overlooked. But close examination of the volume leads to the conclusion that it epitomises all that can usefully be said about diets at the present time.

A diet must be adapted to the country as well as

to the disease and to the individual, and these are essentially practical diets for British people. Dogmatism as to the exact analyses of any diet or even any article of food is always unscientific because items of food must vary considerably in their constitution according to their season and methods of cultivation; with admirable modesty the compilers state that no great accuracy can be claimed for any figure or percentage given in view of the topographical and seasonal variations revealed by analyses of articles of food. We can heartily commend this book to all practitioners who wish to employ dietetics in a practical and scientific manner.

Appointments

EVANS, P. J., M.B. Camb., F.R.C.S. Eng., D.O.M.S., has been appointed Assistant Ophthalmic Surgeon to the Birmingham United Hospital for duty at the Queen's Hospital.

WATSON, ROBERT, M.B. Belf., F.R.C.S. Edin., M.C.O.G., Hon. Obstetric Surgeon to the Northampton General Hospital.

Births, Marriages, and Deaths

BIRTHS

ANDERSON.—On Oct. 25th, at Shrewsbury, the wife of Dr. F. A. Anderson, of a son.

KERR.—On Oct. 31st, the wife of J. A. Kerr, M.D., of Lansdowne Avenue, Grimsby, of a son.

ROTHERHAM.—On Oct. 27th, the wife of Dr. E. B. Rotherham, Grimsby, of a daughter.

MARRIAGES

LOW—GEMMILL.—On Oct. 29th, at Merrylea Parish Church, Glasgow, Edward Bruce Low, M.B., Ch.B. Edin., Shoreham-by-Sea, Sussex, to Clair Gemmill, daughter of Mrs. Jessie Biggar, Newlands, Glasgow.

PORTER—STOWELL.—On Nov. 2nd, at the church of St. Cross, Knutsford, Cheshire, T. W. Herdman Porter, B.M. Oxon., M.R.C.S. Eng., only son of Dr. and Mrs. Hordman Porter, of Faversham, Kent, to Pamela, only daughter of Mr. and Mrs. Herbert Stowell, of Knutsford.

RENSHAW—ROLFE.—On Oct. 30th, at the Twickenham Memorial Chapel, Arnold Renshaw, M.D. Lond., of Manchester, to Barbara Joan, elder daughter of the late Edgar C. Rolfe and Mrs. Rolfe, of Sheringham.

TREVOR—BLYTH.—On Oct. 26th, at St. Stephen's Church, Ipswich, David Trevor, M.S. Lond., F.R.C.S. Eng., of London, to Kathleen Fairfax Blyth, niece of Miss Mary Blyth, of Ipswich.

DEATHS

GARDE.—On Oct. 23rd, at Mombasa, Alfred Jervoise Garde, M.B. Dub., Uganda Medical Service, son of Surg. Capt. and Mrs. Garde, of Falmouth, aged 29.

HARKNESS.—On Oct. 26th, Thomas Harkness, M.B. Edin., of Derby, aged 78.

HISLOP.—On Oct. 30th, at Geraldine, Canterbury, New Zealand, Patrick Wood Hislop, M.D. Edin., son of the late J. Fowler Hislop, Castlepark, Prestonpans.

HOLMES.—On Nov. 1st, at Salisbury, Arthur Norman Holmes, M.B. Dub., aged 59.

MORGAN.—On Oct. 30th, at Beckenham, Llewellyn Arthur Morgan, M.D. Durh., M.R.C.S. Eng.

RICHARDSON.—On Oct. 27th, at Portinscale, Keswick, after a short illness, William George Richardson, M.B. Durh., F.R.C.S. Eng., aged 72.

ROE.—On Nov. 1st, at Shipton-under-Wychwood, Oxford, Edwin E. W. Roe, M.R.C.S. Eng.

SEVI.—On Oct. 24th, 1935, suddenly, Joseph Sevi, M.R.C.S., L.R.C.P. (of Paris and London), docteur en médecine, lauréat de la faculté de médecine de Montpellier, ex-interne en médecine de l'Hôpital Rothschild de Paris. At 104, Cazenove-road, N.16 (formerly of Upper Clapton-road, E.5). Beloved son of Mrs. S. Sevi and the late Reg. M. Sevi. Communications to 48A, Upper Clapton-road, E.5.

THOMPSON.—On Oct. 31st, at a nursing home, London, Charles Herbert Thompson, M.D. Dub., M.R.C.P. Lond., formerly of Harristown, Rathdowney, Queen's Co., Ireland, aged 78.

WINTER.—On Nov. 2nd, at Dublin, William Arthur Winter, M.D. Dub., B.A.O., Physician to Stevens' Hospital, Dublin, ex-President, R.C.P.I.

YOUNG.—On Oct. 30th, at the Essex County Hospital, George Young, M.D. Zurich, and New York State, M.R.C.S. Eng., of Colchester, aged 60.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

¹ The Local Social Survey in Great Britain. By A. F. Wells. London: George Allen and Unwin Ltd. Published for The Sir Halley Stewart Trust. 1935. Pp. 108. 5s.

² A Catechism of Air-raid Precautions. By Norman Hammer, M.R.C.S. With foreword by F. P. Wilson, J.P. London: John Bale, Sons and Danielsson Ltd. 1935. Pp. 99. 1s.

³ Diet Book of the David Lewis Northern Hospital, Liverpool. Liverpool: Lee and Nightingale (Printers). 1935. Pp. 44. 5s.

ADDRESSES AND ORIGINAL ARTICLES

PHARMACOLOGICAL ASPECT OF
DIGITALIS THERAPY *

BY A. FRAENKEL, M.D.

HEIDELBERG

DIGITALIS was being used as a therapeutic agent long before the time of Withering¹ but the specific indications for its application in disease had not up to then been properly recognised. And Withering's conception of its cardiac action was by no means immediately accepted. Indeed, almost a hundred years went by before it could be said that the majority of physicians, both on the continent and in England, were making use of this conception in the practice of their profession.

Belief in the essential correctness of Withering's view arose not from the publication of a new edition of his classical monograph, nor from its translation into French and German. It sprang rather from the experimental work of clinicians who at that time were beginning to take an interest in physiology, and from whose investigations a new branch of medical science was being initiated: pharmacology. Indeed, pharmacology, in its interest in the isolation of active principles and in the investigation of the mechanism of action of old-standing remedies, has always given a privileged position to digitalis; and in spite, or rather because, of this historical development, clinical medicine has accepted the results of pharmacological investigations in so far as the mode of action of this drug is concerned. When, however, we look for the close application of this knowledge in therapeutics, we find clinical medicine still adhering strongly to traditional methods in the use of digitalis. This is especially so with general practitioners who feel disinclined to deal with experimental results which have accumulated during a long period of time, and, with the knowledge so gained, to proceed towards a rational use of digitalis in medicine.

Nevertheless, it should be possible to free the methods of use of digitalis from empirical tradition, and to ensure the same degree of accuracy in administering digitalis to patients as is demanded in a pharmacological experiment on the lower animals. In trying to do this we have of necessity to dispense with the customary galenical preparations and their many substitutes, and in addition to change the usual route of administration.

Route of Administration

Numerous experiments, originating in clinical experience, have shown that the effect of digitalis when given by mouth is decreased as a result of its reactions with the acid gastric juice and the intestinal alkali. Moreover, absorption is inhibited owing to the surface activity and adsorption of the drug. Consideration of these properties makes it clear that the effect produced by the drug at its specific seat of activity is both weakened and delayed after oral administration, and that the degree of this depression and delay will show large variations when different preparations of the drug are employed. Great as this loss in activity following oral administration in normal animals may be, it becomes increasingly so

in patients under the pathological conditions of circulatory failure; indeed, under such conditions the loss becomes incalculable. With oral administration, even when pure substances are used, the production of quantitatively predetermined effects becomes impossible. By the rectal route these sources of error, although diminished, are not entirely removed, and the local irritative effect produced by all digitalis glucosides excludes intramuscular and subcutaneous injection as means of giving this drug. The only suitable way then, of administering this valuable remedy quantitatively to the heart, is by intravenous injection, the essential requirements for scientifically conducted experiments being the same whether these experiments are performed on animals or belong to the field of experimental therapy.

The unrestricted prohibition which even pharmacologists placed on the intravenous administration of drugs had been shaken as early as 1890 by Baccelli and Landerer, long before the introduction of strophanthin therapy, and it should have been entirely removed by the general adoption of this route in the giving of salvarsan. In spite of this, however, objections have been raised repeatedly to the application of an essentially laboratory technique to therapeutic practice. Such objections are clearly invalid in view of the fact that my pupils and I during the past 25 years have carried out tens of thousands of intravenous injections of strophanthin without any of the dreaded complications having arisen. Confirmation of such freedom from danger is being received from every side since the dosage has been chosen according to certain rules established by my co-workers and myself, and since practitioners have made themselves familiar with the technique of administration.

Specificity of Action

Apart from specificity of action, the essential conditions for intravenous administration of a drug are solubility in water and stability of the watery solution. In so far as specificity of action is concerned, all digitalis glucosides comply in their fundamental characteristics with this condition. Recent developments in the chemistry of digitalis have revealed close relationships between the different glucosides, and this "Digitalis-monotonie"²—to use Sträub's expression—explains to some extent the similarity of their pharmacological actions. We are indebted to Cloetta,³ Windaus,⁴ Jacobs,⁵ Stoll⁶—to mention but those who have made the greatest contributions in this field of chemistry—for having supplied the analytical proof of the similarity in chemical structure of the whole pharmacological group. All these glucosides can be split by hydrolysis into a sugar-free organic compound—the genin—and one or more carbohydrate molecules. The similarity in chemical constitution is confined, however, to the genins, the genin of strophanthin—strophanthidin—having the same number of carbon atoms as that of digitoxin, namely, 23; the former differing from the latter only in the possession of two hydrogen atoms more and two oxygen atoms less. Greater difference occurs, however, in the structure of the sugars with which the genins are combined. The genins of the glucosides of *Digitalis purpurea* (glucosides of the first order) are combined with two or three molecules of digitoxose, a methyl pentose which occurs only in plants, and which can be broken down by the human organism only with difficulty. On the other hand, the sugars.

* A lecture delivered before the British Pharmacological Society at its meeting in Cambridge on July 5th, 1935. The observations and experiments on which the lecture is based are published more fully elsewhere.²²

of the digitaloids (glucosides of the second order, such as strophanthin, adonis, scilla, &c.) are easily decomposed in the animal organism since they are for the most part pentoses and hexoses. The carbohydrate of K-strophanthin, for instance, is a disaccharide consisting of glucose and cymarose both of which are readily soluble in water. G-strophanthin, or ouabain, contains the methyl pentose rhamnose which is far less soluble in water.

In spite of the "monotony" of chemical constitution which the genins exhibit, and the qualitative similarity in the effects which they produce, wide differences are observed in their quantitative actions, differences which Straub ascribes to the structure of the carbohydrate component of the molecule. It was only by keeping in mind these differences that the possibility arose of choosing a compound for intravenous injection which should prove most suitable for the development of a new method of treatment. I was guided in this choice by the results of experiments on cats⁷ in which were compared the degrees and duration of action of the different members of the digitalis family. Slowing of the pulse-rate being chosen as the criterion of action, the effect of glucosides of the first order was found to occur more slowly and to last longer than that of the glucosides of the second order. In the case of the latter the action both appeared and disappeared rapidly, and in contrast with what is found with digitoxin, the action could be maintained by repeated injections without there appearing any toxic effects attributable to cumulation of the drug. Cumulation, therefore, proved to be least with the digitaloids, and

antrhin, since it proved to be less toxic and more easily soluble than G-strophanthin.

Fig. 1 shows in a schematic way the difference in the degrees of cumulation with digitoxin and strophanthin when repeated and individually effective doses of each drug are given at constant intervals of time. As can easily be seen the toxic range of concentration is more readily attained under these conditions with digitoxin than with strophanthin. Hatcher⁸ has since repeated my experiments on cumulation, using an improved technique, and has confirmed my observations. But the scientific reason for the empirically discovered superiority of certain glucosides was only made clear by Straub's⁹ fundamentally important work on the varying degree of fixation of the digitalis glucosides by the tissues, work which found extension in the recent investigations of Fromherz and Bauer¹⁰ and of Weese and Dieckhoff¹² dealing with certain after-effects connected with cumulation. Büchner¹¹ pointed out the similarity between these late effects and changes in the heart muscle due to an impaired coronary circulation, and Fromherz showed that big doses of digitoxin did not, as Hatcher believed, lead to a fixation of digitoxin by the heart, lasting for several weeks, but produced irreparable and morphologically detectable injury to the heart muscle, the result, presumably, of coronary insufficiency.

Therapeutic and Toxic Cumulation

The key to the experimental differentiation between therapeutic and toxic cumulation was provided by Weese and Dieckhoff¹² when they showed on the one hand that therapeutic doses of the glucoside increased the isolated heart's capacity for work and its period of survival, and inhibited the processes of fatigue; and on the other, that toxic doses, themselves leading to morphological changes in the muscle, decreased the capacity for work and accelerated the processes of fatigue. In spite of this, however, the period of survival of such injured hearts was prolonged to the same extent as was that of hearts treated with therapeutic doses. Now the effects of these delayed injuries from digitoxin—first detected by Fromherz—had also occurred in my own experiments but I had not properly realised their significance. Even at that time, however, it struck me that the effects were to be seen only in animals treated with digitoxin, those treated with strophanthin for the same period never succumbing as the result of its administration. Subsequent experimental investigations have shown that the digitaloids, and especially the strophanthins, are fixed to the heart for so short a period that a therapeutic dose is eliminated within 24 hours, and in so giving a concrete reference for my own observations, have provided knowledge upon which the treatment of heart failure by the method outlined by myself and critically investigated by others, can be rationally based. It remains to add, as a matter of detail, that amongst the strophanthins the crystalline product from strophanthin gratus is more toxic than the amorphous compound obtained from strophanthin Kombé. This fact was clearly demonstrated by Hatcher and Eggleston,¹³ who were able to show in experiments on cats that, in order to cause vomiting it was necessary to inject intravenously 49 per cent. of the minimum lethal dose if G-strophanthin was used, whereas so much as 65 per cent. was necessary in the case of K-strophanthin.

The chemical and pharmacological investigations to which I have referred, as well as the knowledge which had been obtained with respect to the muscular and vagal actions of the drug, presaged a clearer

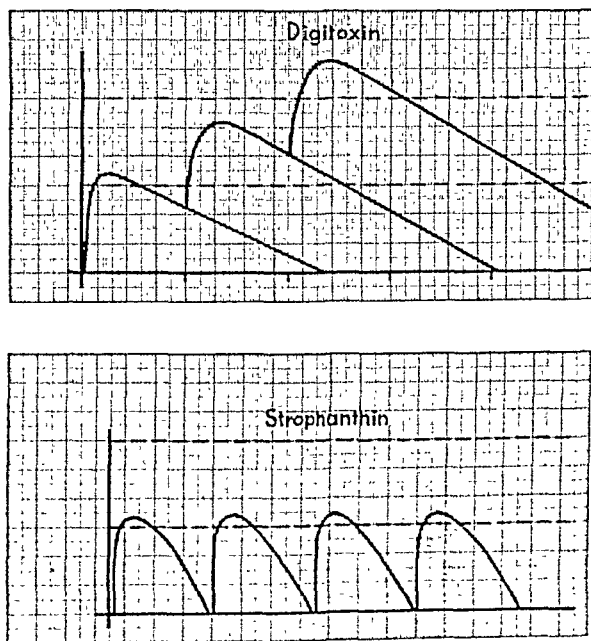


FIG. 1.—Differing cumulation of effect with digitoxin and strophanthin.

the absence of this phenomenon seemed to me an essential condition for the successful development of the intravenous method in treatment with glucosides.

The narrower choice among the digitaloids now fell on that group in which not the diuretic action, as in the case of adonis and scilla, but the cardiac action preponderated. From the two strophanthins which were available at that time, I chose K-stroph-

understanding of the principles of digitalis therapy. But such was only attained when pharmacology began to use, as a basis of interpretation, the law of the heart, discovered and so clearly enunciated by Starling,¹⁴ and when Anitschow and Trendelenburg¹⁵ and Krayer¹⁶ turned to the study of the therapeutic action of digitalis on the injured heart. Now about the same time as these pharmacological experiments were proceeding, a study of the circulation rate and circulating volume of blood in patients with varying degrees of functional impairment of the heart was being undertaken by clinicians and experimental pathologists, using the newer methods—gas-analysis (Barcroft, Grollmann) and physical (Broemser)—with which physiology had supplied them. A critical review of the results of such clinical investigations, carried out with different methods, admits no doubt that heart failure, as occurring after exertion in the milder degrees of functional impairment and during repose in the severer, is associated with a diminished stroke volume and a decreased output per minute, to which are linked, as secondary effects, changes in the volume of circulating blood.

Digitalis and Strophanthin

The intravenous administration of strophanthin, which had been adopted in the meantime, made it possible to study the effect of digitalis upon the course of these processes in man with methods as exact as those used in experiments on animals. Only patients with severe dyspnoea have to be excluded from such investigations. Now the experiments of Lauter and Baumann,¹⁷ Kroetz,¹⁸ Stuart and Cohn,¹⁹ and of my pupils Herzog and Grasmann,²⁰ leave no room for doubt that the main effect of digitalis in heart failure is an increase in the stroke volume and a change in the distribution of blood resulting from the increased circulation rate. Such an effect can be obtained with no other drug. The absence of appreciable effect on the healthy, as on the diseased heart when functionally compensated, and its appearance after minute doses in decompensation, may perhaps be explained in part by the intramuscular development of a specific sensitivity to digitalis in this latter group. For it is known from Weese's²¹ experiments that the intravenous injection of the glucoside is followed by the fixation of about 10 per cent. of the dose by the heart. If, as has been done by Clark,²² we calculate the amount of strophanthin fixed per gramme of heart muscle, the astonishing fact is revealed that 1 g. adsorbs at most 0.002 mg. of the drug. If, moreover, we assume that a compensated heart has undergone an increase in weight by 50 per cent., and if we further take into account the fact that one-tenth of the lethal dose has a detectable effect upon the diseased heart exhibiting a high sensitivity to digitalis, we arrive at the conclusion that the concentration in which digitalis acts is of the same order as that found in the case of the hormones.

To the question whether or no there arises a specific increase in sensitivity to digitalis when the heart fails,

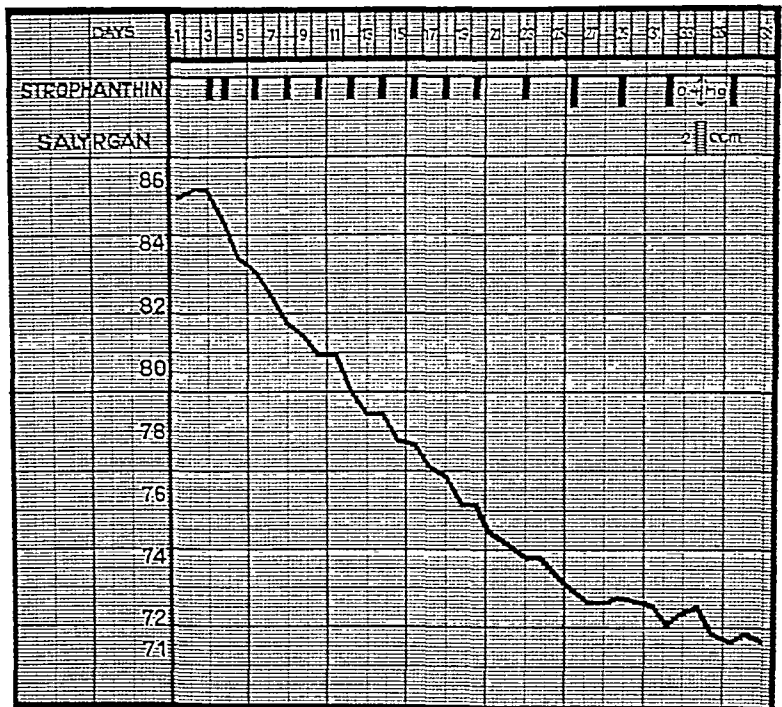


FIG. 2.—To show typical dehydration by means of strophanthin in a case of severe heart failure after treatment with digitalis by mouth had been found unsuccessful.

no definite answer can as yet be given, owing to lack of clinical and especially experimental evidence. Weese points out that since the minute output of the "decompensated" heart is diminished, the possibility arises of a greater proportion of the total strophanthin injected reaching the coronary system and being fixed by the heart muscle.

The fact that disagreement in the theory of strophanthin therapy is associated with unanimity as regards the practical success of treatment with the drug, shows that much still remains to be accomplished by clinical investigation. Unfortunately we still lack methods which are easily applicable in everyday practice for the estimation of stroke volume and minute output. It is true that the physician finds a possible indication of these values in measurements of systolic, diastolic, and pulse pressures. In addition X ray photography and measurement of the venous pressure (the latter rightly emphasised by Lewis) are at his disposal for assessment of the degree of heart failure and of its therapy. Here, however, I should like to invite attention to two further methods of value in this connexion.

First, the daily measurement of body-weight excludes the possibility of neglecting the extrarenal loss of water—an error which easily occurs if only the urine output is determined—and indicates by direct means the day on which the removal of oedema fluid is completed, and so the time when the minute volume has in all probability reached its optimum. Exact observation of this kind enables us to avoid overdosage and at the same time, by gradation of the dose within 0.1 mg., to control accurately the rate of fluid removal, and so to delimit precisely the period allowed for complete elimination of the retained water; a realisation of the therapeutic ideal of obtaining optimal effects from the smallest doses. Fig. 2 illustrates this in the case of a patient who showed no improvement from treatment with digitalis by mouth.

bigeminus) supervened. Fig. 5 shows that after a short period of observation without medication, the loss of water was initiated by salyrgan and the failure of the heart abolished by strophanthin. It may be added that we were able to avoid the appearance of pulsus bigeminus as well as other signs of toxic action, in spite of the fact that the patient received in the course of 60 days 25 injections of strophanthin of about 0.3 mg. each, amounting to 6.3 mg. of the drug. In addition a total of 16 c.cm. of salyrgan in 12 injections was given. The elimination of water resulted in a decrease of 21 kg. in body-weight,

means—Withering's therapy retains its position in the treatment of heart failure where such is of not too severe a degree or of not too long a standing.

I wish to thank the editors of "Strophanthintherapie" and the "Verhandlungen der Deutschen Gesellschaft für innere Medizin" and the publisher, Herrn Julius Springer, Berlin, for permission to reproduce the Table and Figs. 3, 4A, 4B, and 5 from papers by Dr. Herzog and myself.

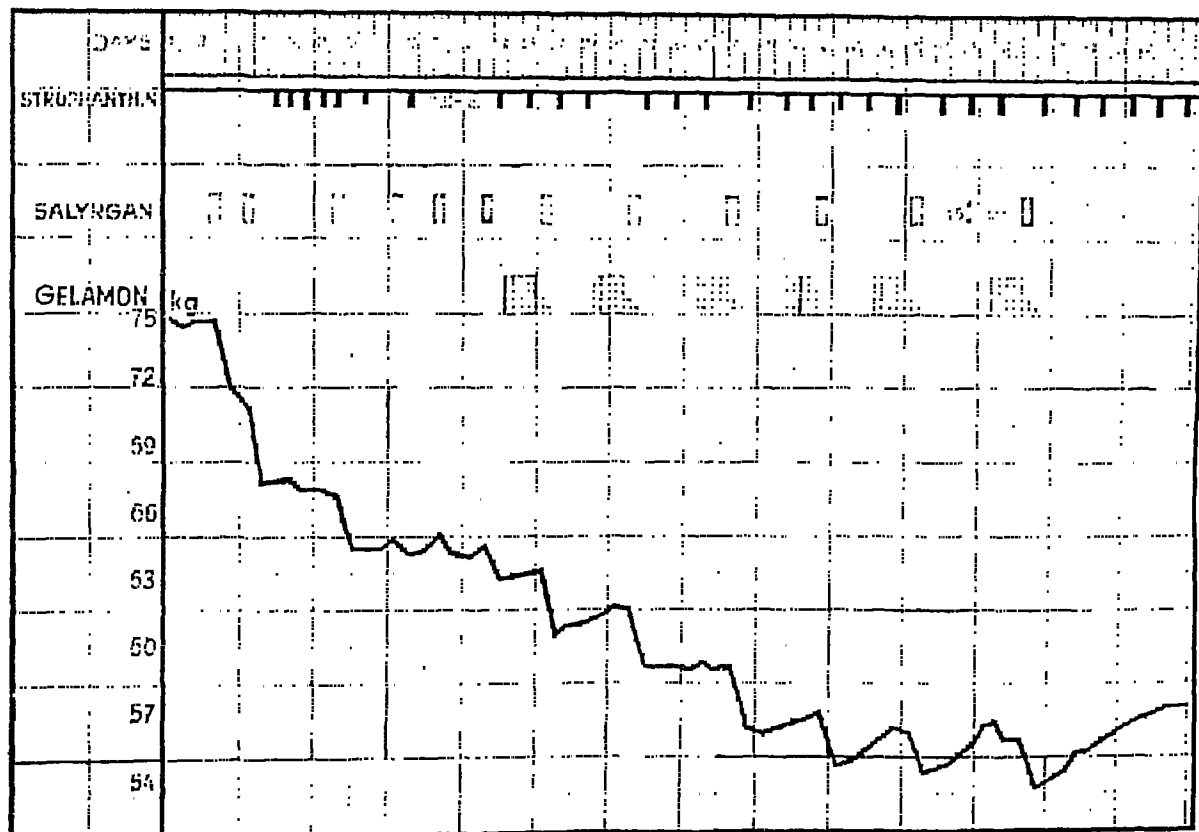


FIG. 5.—To show typical dehydration by means of strophanthin and salyrgan in a patient with old-standing oedema and in whom signs of overdose with digitalis had previously appeared.

a fact which shows that the normal weight of the patient had increased by as much as 40 per cent. during the development of the failure. Notice should also be taken of the fact that the elimination of oedema fluid under the influence of the diuretic salyrgan, acting on the tissues and kidney, occurs characteristically in steps, whereas during the quantitatively controlled treatment with strophanthin this loss proceeds steadily. This can be seen especially well if Fig. 5 is compared with Fig. 2.

From the first experiments with digitalis on the frog's heart to the more recent and complicated investigations on the action of digitalis on the heart and circulation of the mammal, the path has been long and tiresome. We must not be surprised, therefore, if the practical application of pharmacological research to the reduction of the suffering and to the prolongation of the lives of patients with heart disease, takes long to achieve. This attempt, however, to evolve a rational digitalis therapy from a knowledge of experimental pharmacology, and to describe the peculiar importance of the intravenous route in connexion with the glucoside which is most suitable for this mode of administration, is not to be regarded as a revolt from the customary empirical use of preparations of digitalis by mouth. By no

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OBSTETRIC PRACTICE OF THE FUTURE*

By MILES H. PHILLIPS, M.D., F.R.C.S. Eng., F.C.O.G.

EMERITUS PROFESSOR OF OBSTETRICS AND GYNECOLOGY,
UNIVERSITY OF SHEFFIELD; CONSULTING SURGEON TO
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At the present day it is often stated that all is not well with obstetrical practice in this country; nor is it in fact perfect in any country. There are many factors involved, many openings for errors in judgment, even by the competent specialist working under the best conditions. Much greater are the difficulties and more frequent the occasions for faulty practice in the surroundings in which so many women are delivered.

Factors Favouring Institutional Midwifery

I propose to examine two considerations, which in our evolving civilisation have come to the front, and, I believe, will prove to be fundamental factors in directing the practice of obstetrics in the future. These are (1) the increasing demand by women themselves for the relief of pain at childbirth, and (2) the desirability of lessening so far as possible the traumata of parturition both maternal and foetal. The most satisfactory and successful means of providing these safeguards will, in my opinion, require and lead to the provision of more and more lying-in beds in hospitals, voluntary, municipal, and private. The midwife and the obstetrician of the future, working in coöperation, will, it appears to me, conduct more and more and finally all deliveries, in specially equipped institutions. However great may be the supposed advantages of domiciliary midwifery in present-day practice, they will be supplanted, I believe, by the benefits to all concerned which will follow the widest possible extension of institutional midwifery.

DEMAND FOR RELIEF OF PAIN IN CHILDBIRTH

All must agree that an increasing number of women desire the relief of pain in childbirth. It is not only fair and humane to recognise this demand, but sound in principle to accede to it. By preventing or dispelling severe pain in childbirth, both physical and mental shock with their harmful consequences, immediate and remote, are obviated. However, the successful methods so far available require constant attention by nurse or doctor, and often doctor as well as nurse, and both of these must be specially experienced in the choice and control of these pain-relieving drugs. One must also admit that the natural course of labour is often prolonged.

In domiciliary practice the achievement of really effective relief from pain demands too much of the family doctor's time, and so may easily lead to interference in the labour which may be premature and harmful, or, even if well chosen and advantageous, cannot, with due regard to immediate safety or future comfort, be carried out in the ordinary domestic bedroom. The necessary space, assistance, and even equipment may be, one or all, lacking.

My second consideration is, the avoidance of birth trauma.

AVOIDANCE OF BIRTH TRAUMA

I am not concerned now with the prevention of severe trauma of mother or foetus by the employment

of induction of labour, or of Cæsarean section in cases of pelvic contraction or other instances of marked disproportion between foetus and pelvis. It is already generally recognised that such procedures are most safely practised in maternity hospitals. I have in mind the avoidance of less severe but permanent damage to the pelvic floor and perineal body, and at the same time the prevention of harmful compression of the foetal head by prolonged pressure on the resistant perineum. For a number of years I have been more and more impressed by the advantages to mother and infant of the operation of episiotomy. The increasing use of analgesics and anaesthetics has no doubt helped to bring this about. When they are used the natural forces in labour are often hampered, as I have already stated, and natural expulsion of the foetus is liable to be dangerously prolonged or even completely frustrated.

The Advantages of Episiotomy

I am therefore in full agreement with Prof. Leyland Robinson¹ when he states, in a recent paper on the treatment of genital prolapse, that he is "convinced that prolonged pressure reduces the nutrition and sometimes destroys the tone of the supporting pelvic floor and perineal muscles, and that excessive conservation may be responsible for the development of prolapse. A well-judged episiotomy designed to cut short this harmful period of waiting and dangerous pressure, is," in his opinion, "a prophylactic measure of real value and one that ought to be employed more frequently."

Prof. Robert Goodall² of Montreal has also written recently, and very convincingly, in favour of episiotomy followed by immediate and careful suture. After ten years' experience of the conservative policy of non-interference, he has come during the succeeding ten years to practise prophylactic intervention near the end of the second stage of labour with definite objects in view: (1) reduction in the amount of damage to the abdominal wall; (2) minimal damage to the supports of the uterus, bladder, and rectum; (3) a completely restored pelvic floor; (4) great reduction in the number of stillbirths, and I think one can fairly add a probable lessening of mental morbidity in childhood and adult life.

In regard to this last consideration, it is significant that Dr. Leonard Findlay,³ who has devoted much time to the study of the causation of mental deficiency, does not think that it is to any large extent hereditary. On the other hand he believes that in the larger proportion of cases it is due to difficult birth, and he draws attention to the special liability of the first-born to this defect. This view is held by other authorities: Dr. R. D. Clarkson,⁴ of the Royal Scottish National Institution for Mental Defectives at Larbert, considers it "cruel and inaccurate to maintain that mental deficiency is hereditary": "Very few of the parents of the patients in the Larbert Institution are certified defectives." "John Thomson, Leonard Findlay, and Charles McNeil have all," he states, "proved that heredity plays only a small part in the aetiology of mental deficiency," and Dr. Clarkson "is quite certain that a very large proportion of the cases are caused by injury to the brain at birth." Excessive moulding of the head from prolonged pressure on it by a resistant pelvic floor must occur to the experienced obstetrician as one likely cause of this calamity.

Central episiotomy comprises a precise and predetermined division of the fascial septa separating the perineal muscles, and even of the vagino-rectal sheet of fascia which runs from belly to belly of the

* The second part of a paper entitled *Men-Midwives Past and Future*, which was read before the Bristol Medico-Chirurgical Society on March 13th, 1935. The first, historical, part was published in the *Bristol Medico-Chirurgical Journal*, 1935, lii., §3.

levatores ani. This is in place of bruised and crushed lacerations of the fascia and muscles—generally open and obvious injuries, but not seldom subcutaneous and therefore invisible. When the episiotomy wound has been sutured in layers, with the precision which adequate assistance and good light make possible in a clean-cut wound, the woman can return to her domestic or other duties, unhampered by the constant discomfort produced by sagging pelvic floor and viscera. Junior students watching the operation of repair are surprised to see the thickness of the perineal muscles, which ranges from one-third to half an inch, instead of the "slender fasciuli" which text-book anatomists have taught them to expect. Surely it is better for the woman to have such a wound repaired in this thorough way, than to have to submit to the formal plastic operation, expensive in both time and cost after years of increasing discomfort.

If we recall the preparations, precautions, and personnel which are found necessary to ensure success in these belated plastic repairs, and contrast them with the disadvantageous circumstances in which the recently torn perineum and vagina are more or less ineffectively stitched, it seems clear that this wide gap between mismanagement and efficiency must be bridged. More than half the beds in my gynaecological wards are in constant use by patients recovering from the plastic repair of old obstetrical injuries; more than half the time I spend in the operating theatre is occupied in repairing the damage which parturition has inflicted on the genital passage. I will grant that perhaps a fourth of these operations are concerned with injuries to the cervix and upper vagina especially, which have often followed premature and injudicious interference in parturition. These are often enough no doubt due more or less directly to the difficulties of time and place which surround ordinary domiciliary midwifery practice. However, the majority of these repairs involve the perineum and pelvic floor. The rectocele resulting from the injuries inflicted during childbirth may cause daily discomfort and produce much mental distress and even neurasthenia. This damage should have been prevented by adequate management in the hour of labour. Such effective care, I submit, can only be guaranteed in a properly equipped maternity hospital—not necessarily a large one—with all the facilities of equipment and personnel which are rarely if ever available in the woman's own home.

It is also my experience that episiotomy at the right moment, is often followed by natural unaided expulsion of the foetus. The right moment is in the latter part of the second stage, as soon as it is evident that the perineal body is holding back the foetal head. The last and probably most harmful degree of moulding, which might have resulted from the most careful extraction of the head by means of forceps, may thus be avoided.

It is of interest to contrast, by gauging with finger and thumb, the thickness and tonicity of the perineal body in women after a properly repaired episiotomy, and in other women after a natural delivery in which there had been no surface tear, but subcutaneous laceration followed by retraction of the muscle. Such laceration leaves a thin and toneless perineum and is often followed by the formation of a rectocele and a lack of support to the lower part of the anterior vaginal wall on which rests the urethra. The perineum restored after episiotomy will often, of course, require the same care at a subsequent labour, a possible disadvantage in the old days of large

families and frequent childbearing. The present-day smaller and wisely spaced family does not focus attention on this consequence. On the other hand, the modern mother has probably a higher standard of comfort and prefers to feel as sound and "comfortable below" as she did before her child was born.

Extension of Institutional Practice

I have given the two main considerations which lead me to advocate an extension of institutional midwifery practice. Many others could be advanced, not the least impressive being contained in the following extract from a recent letter⁵ by a young general practitioner, in condemnation of the handy-woman. He says:—

"Not infrequently I have had a filthy woman of abysmal ignorance and ineptitude as helper, a cottage room bunged up with old furniture, clothes, bric-à-brac, no hot water, a candle to work by, and in these surroundings have had to do a difficult forceps, first giving the anesthetic, then hastily scrubbing up and performing the operation—with one eye on the patient, one on the job, and any spare glances to keep the 'Gamp' from interfering."

Such reasons as these are already greatly influencing the general public as well as many maternity nurses and medical attendants, the result being an increasing demand for maternity in-patient treatment throughout the country.

The number of maternity beds available in municipal institutions, in voluntary hospitals, and in private nursing-homes is rapidly increasing. It is not possible to give exact figures for the whole country, but Sir George Newman in his Annual Report for 1933 recognised the increasing demand and its consequences; he gave a table showing that in the city of Manchester the proportion of the total number of births, taking place in hospitals and registered nursing-homes, has risen year by year from 10.9 per cent. in 1924 to 40.36 per cent. in 1933 (it was over 50 per cent. in 1934). He remarks that "This may fairly be regarded as representative of the present tendency in urban areas." Most of us are aware that this tendency is also evident in the smaller towns, and even in country districts the village midwife and the family practitioner find that many women will readily avail themselves of a maternity hospital as soon as one is provided in the adjacent market town. Both midwife and doctor quickly realise that such an arrangement is helpful.

Modern housing, which usually provides more but markedly smaller rooms, and the increasing difficulty in obtaining domestic assistance exert an influence in the same direction. In some places the demand for this accommodation greatly exceeds the supply.

LIMITATION OF SIZE OF INSTITUTIONS

This is not the occasion on which to consider in detail the construction of these hospitals. They would vary in size from the large urban hospital of 100 to 200 beds, adapted not only for the comfort and safety of parturient women, but also for the purposes of teaching and research, to those of 10 to 20 beds, perhaps more or less closely associated with cottage hospitals, to serve country districts.

There are reasons for holding that there should be a definite limitation in size; it is likely that those hospitals not exceeding 100 beds would give better results than those with more. Whatever the additional cost might be, it would be wiser for a large urban area to provide two or even more maternity hospitals rather than one beyond the capacity of personal control by the obstetrician in charge.

I can also picture a small lying-in hospital as an

essential part of the lay-out of a modern garden city, or of the new residential areas which are springing up so rapidly on the outskirts of all large cities; and possibly, even as a standard provision in the large residential flats which are bound to arise in the central areas of the largest cities. By such means would be avoided the great drawback of a forbidding distance between the woman's home and her lying-in bed.

No one knows better than I that many experienced obstetricians look with great disfavour and even alarm on a wide extension, such as I have outlined, of institutional as opposed to domiciliary midwifery. The increased risk of the spread of puerperal sepsis is a very real one; one has only to read the history of the subject to realise this danger.

The general surgeon has also had this problem of septic infection to face, and he has overcome it with almost complete success. With regard to child-bed infection the problem is, in my opinion, only apparently a more difficult one. As soon as the precautions that have been found necessary by the general surgeon are carried out conscientiously and in minute detail by fully trained obstetricians and midwives, so soon shall we see a marked fall in the incidence of puerperal sepsis.

However, the responsibility involved in bringing together numbers of lying-in women is a very great one—there are loopholes for failure, it is human to err, and the onset of labour cannot be postponed (as most surgical operations can) when the woman is suffering from general ill-health or some other infective condition. I have here in mind especially infections of the nasopharynx.

ONE-BED WARDS

This special possibility of infection leads me to advocate that each woman in labour, or shortly expecting labour, should be admitted to a single-bedded room of sufficient size to enable a straightforward delivery to be comfortably carried out in that room if so desired. In other words, the hospital bed accommodation should be almost if not entirely "private" and not so to only a small extent as we find in nearly all maternity hospitals—municipal as well as voluntary. This is what can be done in our private maternity homes with a complete absence of serious puerperal infection.

The idea is a very old one; in 1773 Charles White⁷ of Manchester, who wrote so wisely on the management of lying-in women, laid it down that "it would be still better if every woman was delivered in a separate ward, and was to remain there for a week or ten days till all danger of this fever was over." However, I would modify this opinion of Charles White, to which he was driven by consideration of the terrible epidemics of puerperal fever which broke out from time to time in the lying-in hospitals of his day. It would be allowable four or five days after delivery, all being well, and when greatly desired for social or financial reasons, to transfer the woman, preferably bed and all, to a small ward with not more than three or four patients.

I feel convinced that this ideal plan would not be so impracticable as it may at first sound, and it would obviously lessen some of our other difficulties, for example the shortage of accommodation, with its evil consequences, which arises when large wards are being cleaned, and also the danger of imported infection by visitors.

THE PERSONNEL REQUIRED

It must have become obvious that I expect the "man-midwife" of the future to have had a special

training in obstetrics and especially in surgical obstetrics.[†] This will necessitate post-graduate residence in a maternity hospital, and the obtaining of a special diploma as evidence of proficiency in operative midwifery. The larger hospitals must be controlled by a resident master-obstetrician and gynaecologist. Under him will work a whole-time staff of large experience, who will be directly responsible for all major operations. They will also control and supervise the routine work of the midwives, who, in the near future, will be compelled, I am convinced, to take a much longer and more thorough course of training than is the rule at present.

In the smaller district and country hospitals, it will probably be found necessary for a family doctor, who is sufficiently interested in obstetrics to have qualified himself by special post-graduate hospital experience, to attend these patients with the coöperation of the highly trained resident midwives, aided of course by a colleague when an anaesthetic is required. In other words, before undertaking this responsible work he will have to have gained experience and skill, after graduation, by a long period of residence in a maternity hospital, and not, as has been too long the case, by striving to overcome the difficulties of domiciliary practice, often, I readily grant, with surprising success, but sometimes at the expense of the parturient woman or her child.

Would this revolutionary change be such a grave hardship as some imagine? I doubt it. Many of my doctor friends have told me of their dislike for midwifery, with its anxieties and exactions; that they undertake as little as possible, and that only in order to benefit their general practice.

Surely such an attitude of mind is a very grave handicap. I have long realised this. My own views could hardly be better expressed than in the following sentences which I have extracted from a recent letter—again from a general practitioner.⁶ He says:

"Probably most general practitioners would admit that they consider midwifery the most irksome of their many duties. Either it interferes with the ordinary run of work or it deprives them of much-needed hours of sleep. . . ."

He suggests that:—

"The medical profession should organise its own midwifery on the following lines. Let the country be divided up into districts. In each district the general practitioners would agree to hand over all their midwifery to someone who wishes to specialise in this work and in gynaecology, and who, in turn, would guarantee to practise solely as a gynaecological surgeon and specialist in midwifery. . . . The general practitioner would be relieved of much night work without losing his family practice."

In addition, he points out, "neighbouring districts could combine to equip up-to-date maternity and gynaecological hospitals." The author of this letter and I, looking at the problem from different angles, would seem to have come to very similar conclusions. I feel sure he would agree with me that this great change will have to be gradually evolved.

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[†] One aspect of the problem discussed in the historical portion of this paper has been abolished by the advent in recent years of highly trained women specialists, who have earned the confidence of both the general public and their male colleagues

CYCLOPROPANE ANÆSTHESIA

A REPORT BASED ON 250 CASES

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BEING THE ANÆSTHETIC STAFF OF THE CANCER HOSPITAL, LONDON

Our knowledge of the chemistry and physical properties of cyclopropane has been gained chiefly from America; it is to Waters and Schmidt of Wisconsin that we are indebted for its introduction and establishment as an anæsthetic agent.

First prepared by the German chemist Freund in 1882,¹ it was not until 1929 that its anæsthetic properties were investigated by Lucas and Henderson at Toronto.²⁻⁴ In October, 1933, a preliminary report on 447 cases of cyclopropane anæsthesia from the University of Wisconsin medical school to the Annual Congress of Anæsthetists focused the attention of anæsthetists all over the world upon the new gas.⁵ It was introduced into England in December, 1933, by Dr. R. M. Muir of Cape Town, who brought a cylinder with him from America and generously consented to administer it to several cases at the Cancer Hospital.

Cyclopropane or trimethylene is an isomer of the hydrocarbon gas propylene. Its formula shows its cyclic structure. It is heavier than air (spec. gravity 1.46) and is almost insoluble in water, but very soluble in lipoids (1 c.cm. olive oil dissolves 103.5 c.cm. cyclopropane).³

Being an inflammable gas, it is explosive in mixtures with air or oxygen. In air the flammability limits are 3 per cent. to 8.5 per cent.; but in oxygen 2.5 per cent. to 50 per cent. (18.2 per cent. cyclopropane with 81.8 per cent. O₂ gives a maximum explosive violence). In nitrous oxide the limits are 3 per cent. to 28 per cent. Hence cyclopropane is capable of exploding as usually administered for anæsthetic purposes. Precautions must be taken, as with other inflammable anæsthetics, to eliminate sources of ignition and therefore its use with the cautery or diathermy is definitely contra-indicated.⁶ It has a characteristic pungent smell not unlike that of ethylene but is not irritating when inhaled in the concentrations necessary for producing anæsthesia.

Cyclopropane can be compressed into cylinders without undergoing chemical change. It liquefies at a pressure of 75 lb. and a 100-gallon nitrous oxide cylinder will hold about 62½ imperial gallons of cyclopropane.* Such a cylinder at present costs £9 in London, but we understand that the gas manufactured in this country will cost about £6 5s. for a similar amount, or 2s. per gallon.

Cyclopropane is prepared by the reduction of trimethylene bromide with metallic zinc in alcoholic solution. The Ohio Manufacturing Company were the first to develop its manufacture and purification, and it was with gas manufactured by this company that the investigations at the University of Wisconsin were carried out; the greater proportion of the gas used for our investigation also being obtained from this source. We have lately obtained samples

manufactured and presented to us by Imperial Chemical Industries Ltd. This has not quite so pungent a smell as that imported from the United States, and after tests with laboratory animals we have employed it at the Cancer Hospital. We are satisfied that it is as potent an anæsthetic agent as that obtained from America; that it is no more toxic, and that it is more pleasant to inhale.

The conclusions reported in this paper are based on an experience of 250 cyclopropane administrations carried out during the past eighteen months, of which 76 were in private practice and the remainder at the hospital.

PROPERTIES

Cyclopropane is a powerful anæsthetic of the potency of chloroform but without its toxicity and without its depressing effect on the circulation. In many of our cases we have found an increase of the systolic blood pressure, and it seems remarkable that this has not been commented upon by the early investigators in America, for we have observed it and checked one another's observations repeatedly. Shortly after administration starts the patient's systolic pressure rises 10, 20, 30 or more mm. Hg; a rise of diastolic pressure follows, but as a rule of less degree. If the anæsthesia be now lightened the pressure usually begins to fall, only to rise again on addition of more cyclopropane. The higher the concentration of cyclopropane the higher the blood pressure, even when the anæsthesia reaches almost to the stage of respiratory arrest; but in cases where the pulse becomes intermittent through overdose and also in those with shock the same continuous rise does not occur. Definitely we found more capillary bleeding than with other anæsthetics.

Waters and Schmidt state that there is no alteration in the coagulation time of the blood.⁷ With this our observations in 4 cases agree.

"Cyclopropane," they say, "is capable of producing narcosis when inhaled in concentration as low as 4 per cent. . . . the average concentration of cyclopropane for first plane, third stage anæsthesia (roving eyeball) was 7.4 per cent., while second plane (fixed eyeball, sufficient for a majority of abdominal operations) required an average of 13.1 per cent., and third plane, with intercostal paralysis, required an average of 23.2 per cent. . . . Fourth stage anæsthesia, or respiratory arrest, was produced with an average concentration of 42.0 per cent. When produced in the presence of high oxygen concentrations, such respiratory arrest has not been found to cause harm provided ample tidal exchange is artificially maintained."⁷

There appears to be a good margin of safety between 23 per cent. and 43 per cent., but in our opinion cyclopropane must nevertheless be considered a respiratory depressant. It is true that deep anæsthesia with consequent depression of the respirations is very easily and quickly attained, and the impression may at first be formed that the anæsthetic affects the respiratory centre more powerfully than is actually the case; but we have occasionally found patients (especially those who have received full premedication) cease breathing before muscular relaxation can be obtained.

One case was particularly instructive in this respect. The operation was a Cæsarean section on a healthy woman who was not in labour. No preliminary medication was given, and the amount of cyclopropane added to gas-and-oxygen was barely sufficient to produce second-plane anæsthesia. The mother breathed normally, but the child did not breathe for ten minutes, and then only after vigorous efforts at resuscitation. Eventually it breathed well, and neither the mother (who afterwards was deeply anæsthetised) or the child showed ill-effects.

* One ounce weight = 3½ imperial gallons of gas.

In low concentration cyclopropane is non-irritant; laryngospasm is caused only by inhaling very high percentages of the gas. There is no increase in the depth of the respirations and deep anæsthesia may be produced in a few breaths. There is very little increase in the pulse-rate. During induction therefore the greatest care and watchfulness must be maintained.

ADMINISTRATION

Premedication.—In most cases we followed our usual custom of giving omnopon, gr. 1/30 per stone of body-weight, an hour before operation. This dose is as a rule insufficient to cause much depression of the respiratory centre. Some patients were given intravenous Nembutal or Evipan, either alone or after omnopon, or omnopon and scopolamine. After this last combination there was considerable respiratory depression; indeed breathing usually stopped before the abdomen relaxed.

Apparatus.—For the sake of economy carbon-dioxide absorption technique was employed in nearly every case, but often the soda-lime absorbent was not brought into use until after induction, in order to obtain the benefit of the increased respiration. In some cases we even added CO₂ to stimulate deeper breathing and increase the rate of saturation, and often where respiration was unusually shallow no CO₂ absorption was attempted throughout the anæsthesia.

Most patients were intubated with a full-size tube, so that when necessary it was easy to continue respiration artificially by squeezing the bag. The deeper planes of anæsthesia were thus easily obtained and the patient remained in good condition so long as this was kept up.

At first we used the simplest apparatus possible: a well-fitting mask with Clausen's harness, a one-gallon rebreathing bag into which soda-lime was put when necessary, and two glass flow-meters which were specially graduated to measure up to 1 litre of gas in multiples of 50 c.cm. Lately we have used the McKesson apparatus with cyclopropane fittings and CO₂-absorption outfit, but have not found it so easy to use nor so economical of gas as our original simple apparatus.

At the commencement of *induction* the bag is filled with oxygen, the face-piece is firmly applied and cyclopropane then run in at the rate of 250 c.cm. per minute. After about a minute the rate is increased to 500 c.cm. or more, as may be necessary. The oxygen flow is now adjusted to about 250 c.cm. per minute—the quantity required by the patient is quickly ascertained—and after a period which may vary from one to five minutes, the cyclopropane flow is stopped completely. Induction is remarkably quiet and excitement is seldom seen. There is neither coughing nor laryngeal spasm, nor are respirations increased; they are in fact usually very shallow, especially when preliminary narcotics have been used. In these cases respiratory movements may even cease altogether without the supervision of true fourth-stage anæsthesia, for the patient is not completely relaxed. If full muscular relaxation is necessary the patient is intubated and respiration continued by squeezing the bag. The deeper planes (with relaxation) are thus easily obtained and the patient remains fit so long as the artificial respiration is kept up. Once relaxation is attained the mixture in the bag is weakened by addition of more oxygen, and spontaneous respiration usually begins very soon. The patient afterwards remaining relaxed although the concentration of cyclopropane respired has been considerably reduced. In most cases once the patient has been anæsthetised cyclopropane need be added

only at long intervals to make up for loss through the apparatus or to deepen anæsthesia if and when necessary.

PHYSICAL SIGNS

The signs of anæsthesia are exactly the same as those seen with other general anæsthetics, but the administrator who has been in the habit of depending upon the depth of respiration as an indication of the degree of anæsthesia may find himself somewhat at sea with the very shallow respiration of cyclopropane anæsthesia. Actually the degrees of respiratory paralysis are the same although much less obvious. In very early, first-plane, anæsthesia the eyes move. As the patient's respiratory centre becomes paralysed by the action of the gas the respiratory excursion becomes progressively less, until finally the diaphragm alone is carrying on the function of respiration. If the anæsthetic is further pushed diaphragmatic movement becomes more and more depressed until finally respiration is entirely arrested.

Except in cases which have received heavy premedication muscular relaxation occurs early and is very complete—owing, it is stated, to the full oxygenation of the muscles.

Usually the rate of the pulse neither rises nor falls with cyclopropane, but in a few of our cases (all of which we would consider as poor risks with other anæsthetics) changes have occurred in its character. There is sometimes an increase in the rate, but more often a slowing to between 50 and 60 accompanied by arrhythmia which may be due merely to extra systoles or to a true auricular fibrillation. It is remarkable that the beats often were not all of the same power; many which were felt at the apex did not come through when the sphygmomanometer cuff was blown up to within a few millimetres of the systolic pressure. Inflation of the lungs with pure oxygen, followed by reduction in the cyclopropane concentration, always stopped the arrhythmia; but we did not find that atropine had any effect upon it.^s

OVERDOSE

If excessive amounts of cyclopropane are used induction may be extremely rapid and the patient may pass into fourth-stage anæsthesia in a few breaths. This has to be prevented by careful control of the gas flow, but overdosage is easy if the anæsthetist has had no previous experience with cyclopropane. Apart from the advent of fourth-stage anæsthesia certain alterations in the pulse of several cases have led us to believe that cyclopropane is not so innocuous an anæsthetic as nitrous oxide or ethylene. It is lipid-soluble; and patients who have inhaled it in fairly high concentration for long periods have taken a considerable time to recover consciousness, often suffering from severe nausea and vomiting.

ELIMINATION AND RECOVERY

Recovery after cyclopropane anæsthesia is usually fairly rapid and without excitement or other undesirable sequelæ. Speaking generally, the duration of recovery depends on the amount of cyclopropane which has been inhaled and also on premedication. After the lightest anæsthesia, lasting only a brief period, the patient will regain consciousness as soon as he would after nitrous oxide and oxygen and with no more after-effects; but after a high abdominal operation, when he has been deeply anæsthetised for an hour or more, consciousness does not return for a considerable time. It must be remembered that in this type of case deep anæsthesia is necessary up to the end of the operation, in order

to allow the abdomen to be closed; hence desaturation of the tissues has hardly begun when the patient leaves the operating-table. In all but high abdominal cases, however, anaesthesia may be progressively lightened as soon as muscular relaxation has been achieved, and recovery of consciousness is thus made much more rapid. Many patients actually speak as the dressings are being applied. We have had no trouble with the breathing and the patient's colour remains good throughout the period of recovery.

Nausea and vomiting is not absent. It is definitely less than with ether but more than with gas-and-oxygen, even in cases which have only had light anaesthesia equivalent to that obtained with gas-and-oxygen.

On the whole cyclopropane affects the patient's metabolism very little; although there is vomiting in a fair proportion of cases there is no evidence of damage to liver or kidney.⁶ Waters and Schmidt state that the output of the kidneys is depressed during anaesthesia and shows a compensatory increase afterwards, as with ether and ethylene.⁷ The blood pressure, raised during the administration, usually

was 52, and he gave a 6 months' history of pain, vomiting, and rapid wasting. Weight 8½ st., haemoglobin (after blood transfusions) 66 per cent. After premedication with omnopon gr. 8/30 induction was uneventful. The patient was intubated, and relaxation, which had to be full, could be obtained only by artificially inflating the chest, the patient having ceased spontaneous respiration before relaxation was complete. Oxygen was running at 3 litres per minute and cyclopropane at 300 c.cm. per minute.

The abdomen had been opened about five minutes (this was about twelve minutes from the commencement of induction), and the bag was being squeezed rhythmically about 20 times a minute, when the patient became pale and the pulse vanished. The lungs were immediately inflated with pure oxygen, but all efforts at resuscitation (including heart massage and injection of adrenaline into the heart muscle) were in vain. Unfortunately we were unable to obtain a post-mortem examination. The case was a poor risk, and the heart was evidently unable to stand up to the stress of deep anaesthesia.

SUMMARY

After a fairly extensive trial we are of opinion that cyclopropane, despite its disadvantages, is a valuable anaesthetic and that it has properties not possessed

Group	Number of cases.	Nausea only.	Vomited.			Percentage of patients complained of nausea or vomiting.	Head-ache.	Restlessness.	Collapse.		Respiratory complications.	Died.
			(1)	(2)	+				Mild.	Severe.		
I.—Light anaesthesia ..	106	10	20	10	3	40.4	5	12	3	0	1	0
II.—Lower abdominal ..	44	4	8	3	2	38.6	0	5	1	1	0	1
III.—Upper abdominal ..	87	4	14	8	5	35.6	0	17	5	4	2	4
IV.—Toxic thyroid ..	13	0	4	0	2	46.1	1	1	2	2	0	0
—	250	18	46	21	12	—	6	35	11	7	3	5

falls to normal within about a quarter of an hour and (except in the presence of surgical shock) does not seem to swing below the patient's normal.

ANALYSIS OF CASE

The accompanying Table is an analysis of the cases on which this report is based. The groups it distinguishes were:—

I.—Light anaesthesia without relaxation. These cases included operations ranging from dental extractions and tonsillectomy to amputation of breast.

II.—For the most part comparatively short abdominal operations such as appendicectomy and hysterectomy. This group also includes 5 cases of nephrectomy.

III.—Long upper abdominal operations with a large proportion of gastrectomies, of which a relatively large number are performed at the hospital. They require careful handling from the anaesthetic point of view.

IV.—Toxic thyroid cases. These afford a good test for an anaesthetic agent, and for this reason they are grouped separately.

The cases which proved fatal may be summarised thus:—

1. Tumour of kidney .. Died 12 hours after of shock.
2. Oesophagectomy .. Died 2 hours after return to ward. fit until pneumothorax during operation. Cyanosed.
3. Carcinoma stomach and oesophagus. Died on operating table (see below).
4. Gall-bladder .. Died of pulmonary embolism.
5. Carcinoma gall-bladder. Died 3 days after. Bad risk. Jaundiced.

In Cases 1, 2, 4, and 5 the patient's death can hardly be attributed to the anaesthetic.

CASE 3 was a man with neoplasm of the stomach, high up and extending into the oesophagus. His age

by others. It seems to be chiefly useful for obtaining deep anaesthesia or for fortifying gas-and-oxygen temporarily. The latter is so innocuous that we see no reason to suggest that cyclopropane should replace it when light anaesthesia is all that is required.

One of the disadvantages of cyclopropane is said to be its cost. With the technique described we used about 2½ gallons for an hour's anaesthesia, which at present costs 7s. 2½d. Expense, therefore, can hardly be regarded as an objection, especially as the price of the gas made in Britain will be considerably lower. A real disadvantage is that of bleeding, and although we have used cyclopropane for breast and thyroid operations we prefer gas-and-oxygen for this purpose. In one or two cases in which the patient already had a high blood pressure cyclopropane has been given with great care and without ill-effects; curiously, the blood pressure rose only three or four points.

Induction is always pleasant for the patient, with no sensations of bursting, throbbing, or choking, such as are sometimes complained of with other anaesthetics. Although the odour of cyclopropane as it issues from the cylinder is not pleasant, patients are not aware of it during induction, nor do they complain of unpleasant taste or smell during the recovery period such as is associated with ether. We have never failed to obtain complete abdominal relaxation, although it has often been necessary to increase respiratory exchange by artificial methods. When this artificial respiration is resorted to it must always be borne in mind that one is dealing with an extremely potent agent which is not without its effect on the heart muscle.

The fact that cyclopropane is neither a respiratory stimulant nor irritant makes it necessary that the anaesthetist should exercise the greatest care in its administration; but in the hands of the expert we believe it to be an anaesthetic of great utility and value.

We wish to thank the house committee and surgical staff of the Cancer Hospital for making this investigation possible. The greater part of the cost of the gas and of the special apparatus was borne by the hospital; but we later received valued help from the Joint Anaesthetics Committee of the Medical Research Council and Royal Society of Medicine. This committee was responsible for the supply of several cylinders of the imported gas and, as the result of successful negotiations with Imperial Chemical Industries Ltd., has secured its manufacture in this country. We also desire to thank Messrs. A. Charles King Ltd., who undertook the troublesome task of importing the gas from America and made suitable apparatus for its use. This they did at cost and without profit.

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WHOOPING-COUGH

THE DIAGNOSTIC SIGNIFICANCE OF BLOOD COUNTS

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Two laboratory methods are commonly used in the early diagnosis of whooping-cough. The first consists in the isolation of the bacillus of Bordet and Gengou on specially prepared blood plates, and appears to be of established value in the earliest stages of the disease. The second depends on changes in the number or type of circulating leucocytes, and towards this method attention has been solely directed in the investigation here described.

Blood counts have been employed in the diagnosis of whooping-cough for over a quarter of a century. Ever since Frölich¹ made the fundamental observation in 1897, leucocytosis has been regarded as characteristic of the disease. Extreme figures have been recorded in pertussis pneumonia. Mitchell and Friedman² reported a case where 233,600 leucocytes were present and clinical evidence did not suggest leukemia. Figures of this magnitude are never reached in uncomplicated cases; indeed a true evaluation of the degree of leucocytosis can only be obtained when the figures are compared with the normal blood counts of childhood. It is occasionally difficult, from the scrutiny of reported results, to decide whether such a comparison was made.

Besides an absolute increase in the number of leucocytes, a relative increase in lymphocytes has long been recognised. As early as 1906 Churchill³ found that lymphocytosis was present in 85 per cent. of recorded cases. This change, he thought, was commonest in the early or catarrhal stage of the disease. More recently Sauer and Hambrecht,⁴ whilst confirming the general presence of leucocytosis and lymphocytosis in whooping-cough, found that the change was greatest at the height of the paroxysmal stage; at the beginning and end of the illness there was often leucopenia. They also noted a terminal decrease in the lymphocyte count.

The present investigation describes the blood count findings in 65 cases of whooping-cough. Most of these were in the late paroxysmal or early whooping stage of the disease and ages ranged from 3 months to 9 years. A division into age-groups has been made for convenience of comparison with Still's table of normal blood counts in childhood (Table I.).

TABLE I

Normal Blood Counts in Childhood (Still)*

	Birth.	Seven days old.	Six mths.	Two years.	Five years.	Ten years.
Total reds ..	5-10 mil.	3-6½ mil.	5½ mil.	5½ mil.	5½ mil.	5½ mil.
Hæmoglobin	132-138 %	112-138 %	70 %	75 %	80 %	85 %
Total leucocytes.	24,000-62,000	14,000-15,000	15,000	13,000	11,000	9,000
Polymorpho-nuclear.	78-80	28-35	35	40	55	60
Lymphocytes.	20-22	52-58	57	52	37	32
Eosinophils.	—	0.4-2.4	1.5	1.5	1.5	1.5
Large monos: transit and basophils.	—	5.6-17.6	6.5	6.5	6.5	6.5

Mil.=millions.

*Still, G. F.: *Common Disorders and Diseases of Childhood*, London, 1927, p. 699.

Blood counts, which consisted of a total and differential leucocyte count, were performed at two stages in the disease—on admission and in early convalescence. The figures obtained were then compared with Still's table and the results expressed as plus or minus normal for the particular age-group. In an attempt to obtain uniformity of results, all the examinations were done by one of us (M. F. C.).

In order to classify the findings a salient abnormality, the increase in percentage of lymphocytes, has been used as the best criterion of variation. Four groups were obtained as follows:—

Group 1	Increase in percentage of lymphocytes.	{ 25 % or more 10-25 % 2-10 %
" 2		
" 3		
" 4.	No significant increase.	

RESULTS OF INVESTIGATION

An absolute increase in the number of leucocytes was present in every case; increases amounting to over 30,000 were occasionally obtained. On an average, each case was shown to have 10,064 leucocytes more than was normal for the age. It should be emphasised that we were dealing, almost exclusively, with uncomplicated cases of whooping-cough in the late paroxysmal or early whooping stage.

Lymphocytosis was less constant. The results in the various age-groups are given in Table II. It will be seen that lymphocytosis characterised some 77 per cent. of cases, and in 35 per cent. this change was marked. On the other hand, as many as 23 per

cent. showed no increase at all. A second point is worthy of attention. In the age-group under six months only 17 per cent. of children showed a marked lymphocyte increase and no less than 33 per cent. showed no increase at all. No other significant difference between the various age-groups was detected.

TABLE II

Percentage Distribution of Children According to Lymphocyte Increase in Various Age-groups

Age-group (years).	No. of cases.	25% or more.	10-25%	2-10%	No significant increase.
0-1 ..	6	17	50	0	33
1-2 ..	21	38	48	0	14
2-5 ..	30	37	33	6	23
5-10 ..	8	37	25	0	38
—	65	36	38	3	23

Leucocyte Counts in Early Convalescence.—The next part of the investigation was an attempt to obtain some information as to the time at which blood counts returned to normal. For this purpose in 36 patients, who had showed abnormalities in the early count, the examination was repeated fourteen days later. It was revealed in consequence that in each case, by the fourteenth day of the whooping stage, the leucocyte count had returned to physiological limits. This was equally true, whether the initial lymphocytosis had been marked, moderate, or mild.

DISCUSSION

Certain qualifications must be made to the wholesale acceptance of blood counts in the diagnosis of whooping-cough. Although a general leucocytosis appears to be constant, this is not in itself of great value, since almost every respiratory infection of childhood is accompanied by an increase in circulating leucocytes. A combination of cough, leucocytosis, and lymphocytosis is strongly suggestive, but a relative lymphocytosis is shown to be absent in 23 per cent. of cases—a considerable margin of error for a laboratory aid to diagnosis. This margin, unfortunately, appears to be accentuated in the very young—just when difficulties in diagnosis are most likely to arise. In spite of these objections a blood count must remain a valuable accessory method of diagnosis in whooping-cough. Characteristic leucocyte changes are present in a high proportion of cases and are at their maximum before the whoop appears.

SUMMARY

(1) In whooping-cough leucocytosis is constantly present. Lymphocytosis is less constant and this is particularly so in children under six months of age. (2) The blood changes are at a maximum early in the disease and rapidly subside after the whoop is established.

We desire to acknowledge our indebtedness to Dr. E. H. R. Harries, medical superintendent of the North-Eastern Hospital, for his coöperation and for his permission to publish this paper.

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RESECTION FOR CARCINOMA OF THE SIGMOID AND SIGMOID RECTUM

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For knowledge of the technique and results of resection and permanent colostomy in cases of cancer of the sigmoid and sigmoid rectal areas, we are indebted to W. E. Miles,¹ William J. Mayo,² Daniel F. Jones,³ Robert C. Coffey,⁴ Frank H. Lahey,⁵ and Fred Rankin.⁶ For many years we all have hoped to have established an aseptic technique for resection of the sigmoid and sigmoidal rectal area in cases where the size of the tumour makes it unsuitable for removal and anastomosis either by the Paul-Mikulicz technique, the Morrison-Balfour technique, or anastomosis with suture. The procedures that the above-named authors have advised consist in a two-stage operation

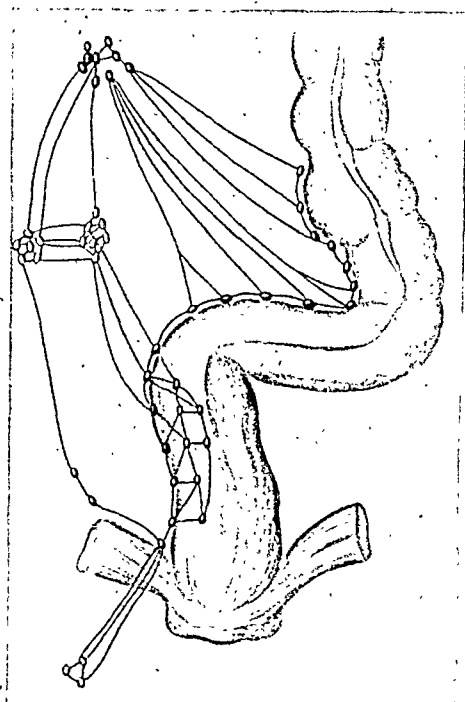


FIG. 1.—Extramural lymphatic structures of rectum and sigmoid (after Miles).

for the radical removal of the tumour and a permanent colostomy. In all these operations the bowel is double-clamped intraperitoneally and the proximal end brought out for the permanent colostomy opening. Most of them, except Lahey, have advised burying the distal segment under the floor of the pelvic peritoneum and its removal at a later stage.

I disagree entirely with this technique, because the simple clamping of the bowel damages the intestinal wall so severely that hordes of bacteria, both microscopic and ultramicroscopic, are spilled into the peritoneal cavity. For years, we have all recognised that the greatest danger in these operations is peritonitis—whether due to direct implantation resulting from severing the colon, to infection in the neighbouring mesentery or to tension causing a leakage of bacterial contents into the peritoneal cavity. In

the procedures described below, I feel that we have arrived at the most aseptic method of removal so far described.

In the first stages the cæcum is withdrawn through a McBurney incision and anchored there for 48 hours. This can be done by applying a clamp to the mesentery of the appendix or suturing the parietal peritoneum to the mesentery, care being taken that at no time is a needle inserted in the colon proper for fear of infection. A Paul's tube is then introduced after 48 hours and a suction apparatus connected of the Wagensteen type. Because of the loss of fluids, we have to give

5 per cent. glucose and normal saline solution by intravenous injection and also by clysis, up to 4000 to 5000 c.cm. during the first few days. Blood transfusions are ordered as the need arises. When the condition of the patient warrants it, he is sent home for a two months' rest, before the radical abdomino-perineal operation is performed.

Upon return to hospital, a complete check-up is made. The administrations of transfusions, glucose, and saline solution, and also the application of an indwelling catheter are ordered. A median or left incision is now made and the mesentery of the left colon is resected from a point above the growth down through the peritoneal reflection, the gland-bearing area being excised (Figs. 1-3).^{*} The abdomen is

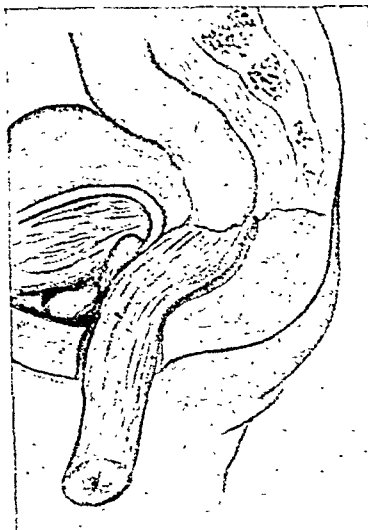


FIG. 2.—Sagittal section showing peritoneal reflection.

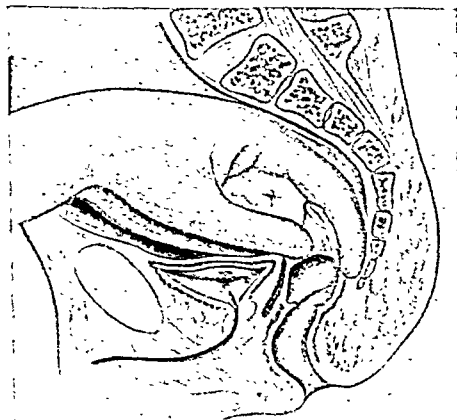


FIG. 3.—Resection of sigmoid and sigmoid rectal by the abdominal route.

areas is painted with iodine, and gauze soaked in iodine is introduced into the rectum. The aperture is then closed with a continuous suture so that more iodoform gauze can be applied to the lower segment and this, in turn, is enveloped in a sterile rubber glove. The perineal incision is made preferably with a cautery and continued until sufficient rectum extrudes, as shown in Fig. 4, in order that a second sterile glove can completely envelope the lower bowel segment. After dissection up to the peritoneal reflection, the abdomen is re-entered, the peritoneal reflection dissected, and the entire loop drawn upward into the abdominal cavity. It is then carried through a separate incision made through the left rectus muscle for the purpose of fashioning a single-barrel colostomy. The peritoneal reflection is closed; the cut edges of the sigmoid mesentery are sutured to the left parietal peritoneum to prevent herniation,

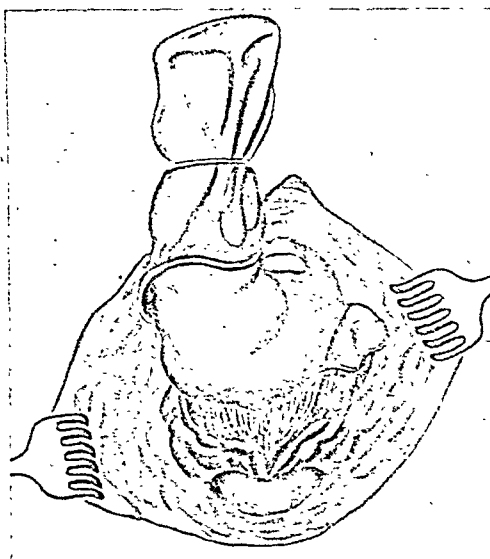


FIG. 4.—Perineal dissection of rectum.

and the incision in the abdomen is also closed in the usual manner. The extraneous gut is double-clamped a few inches from the colostomy opening and severed with a cautery. In the operative procedures that I have described, not once have we used clamps across the lumen of the bowel nor have we severed the colon by cautery intraperitoneally; nor do we permit any suturing of the colon wall to the parietal wall of the peritoneum.

The so-called aseptic procedures utilising various forms of clamps are, in my opinion, misnomers, as the traumatism applied to the bowel by these clamps is sufficient to cause much of the peritonitis in cases of malignant disease of the colon.

The post-operative care of these patients is very important. They are made comfortable by the use of morphia, and 4500 c.cm. of glucose and saline solution is given by hypodermic clysis or intravenously for the first few days. In all my cases I have used an indwelling catheter and have given irrigations of boric acid for at least one week after operation. Parotitis is a complication which causes some anxiety, but in recent years the early use of radium has had a favourable influence.⁷ Repeated blood transfusions are given as indicated by the condition of the patient.

(References at foot of next page)

temporarily closed, and the patient placed in the lithotomy position for perineal resection. The anus

^{*} These illustrations have appeared in a paper on resection for carcinoma of the sigmoid and sigmoid rectum, Surg., Gyn., and Obst., 1934, lxx., 762.

CLINICAL AND LABORATORY NOTES

EXOPHTHALMOS IN AN AGED SPINSTER

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WE are familiar with exophthalmos accompanied by varying degrees of enlargement of the thyroid gland during the early decades of adult female life, but I have recently had under observation a case of exophthalmos with atrophied thyroid in a spinster 84 years of age. The vagaries of the thyroid gland, with or without accompanying exophthalmos, form an interesting study. In simple goitre the thyroid may reach a considerable size, encircling the front of the neck and, apart from pressure, may cause little inconvenience, whereas a comparatively slightly enlarged thyroid may be attended by the unpleasant and distressing symptoms observed in Graves's disease. Occasionally the latter may run a rapidly fatal course. Some years ago I was called to a neighbouring town to see a young woman, 20 years of age or thereabouts, who was the subject of one of the severest and most distressing forms of acute Graves's disease. A healthy woman, she was engaged to be married, but the engagement had been suddenly broken. After two sleepless nights the patient developed exophthalmos with distinct enlargement of the thyroid gland, had a rapid pulse which could hardly be counted, accompanied by audible and visible beating of the heart. Treatment failed to slow the action of the heart or to give the slightest relief. Patient died on the fifth day of her illness.

While exophthalmos and thyroid implications are frequently associated in Graves's disease, the extent of the protrusion of the eyeballs bears no relation to the size of the goitre. Small and medium-sized soft goitres are more frequently accompanied by exophthalmos than are the larger, and in them a marked thrill may be felt and a bruit heard on auscultation.

It was towards the close of last year, when the elderly patient above mentioned was 83 years of age, that exophthalmos developed and rather rapidly increased. For over 40 years she had consulted me at irregular intervals for heart trouble, mitral regurgitation. During the last decade or a little more, she became the victim of widely distributed rheumatoid arthritis affecting the fingers and toes, but apart from occasional indisposition her health remained on the whole good, until three years ago when she began to lose flesh and had pains in the abdomen. Two fairly large irregular masses could be felt, one in each side of the abdomen, and which at times were painful on pressure. The glands in the groins became enlarged and the superficial veins in the lower left abdominal wall became dilated to the size of a quill pen. Under the administration of colloidal copper the hard masses referred to became reduced in size to almost vanishing point. The superficial veins in the abdominal wall also became markedly smaller and with the subsidences her general health improved.

In the early months of this year it was noticed that the eyeballs had become protuberant and staring, a circum-

stance which gave anxiety to her friends. The exophthalmos progressed so that the eyelids could not be closed entirely. The globes were at times painful, and from the orbits at intervals there gushed streams of clear water. The pupils, then and all through her illness, remained normal; the pulse ran between 70 and 82. The condition of the heart remained little altered: occasionally there was slight irregularity which improved with cardiac tonics. Emaciation progressed with the result that no thyroid gland could be felt; the rings of the trachea could be seen and traced all the way down. There was neither palpitation, undue restlessness, nor vomiting; the extremities were always cold, and the urine was free from albumin, sugar, and aceto-acetic acid. There were no signs of incipient myxœdema; her brain was active and her mind alert. In the course of the illness there was for a few days double vision, and in March the urine for the first time contained albumin.

A few weeks later as there was a return of the diplopia Mr. J. S. Arkle, an eye specialist, saw patient with me. He attributed the diplopia to unequal strain upon the ocular muscles. He found the discs normal and that there was no congestion of the retinal vessels. No explanation could be given of the exophthalmos or of the gushes of liquid which were still considerable. Drops of purified petroleum were ordered to be inserted into the eyes, and the patient to wear and to sleep in special glass protectors. In May the gushing of liquid from the eyes ceased, the urine contained a larger trace of albumin, and œdema of the feet developed, but in a few days the œdema disappeared under the influence of digitalis, juniper, and squill.

As the illness progressed patient lost flesh rapidly; she became restless, sleepless, and excitable; she became the subject of delusions, saw all manner of living objects in her room, and talked audibly to herself. Bromide and codein gave relief, but it was not until two or three half-grain tablets of calomel had been taken that her mind became clear. I regarded the symptoms as toxæmic. As the end drew near, Cheyne-Stokes respiration became marked, the heart's beat irregular, and the pulse, which had fallen to 56, rose to 146, the respirations reached 56, and the temperature 102° F. Patient died in coma.

The marked and rapidly produced protrusion of the eyeballs in my aged patient never seemed to me to be explained by thyroid influences, for the gland was atrophied, nor directly through the sympathetic nerves. Its rapid development, pain in the eyeballs, and the gushing of clear water from them in such quantities as to saturate in a very short time two or three handkerchiefs suggested some local condition behind the eyeball itself. Prof. R. B. Green, my colleague in the College of Medicine, with whom I discussed the subject, also thought that the cause, secondary if not primary, lay within the orbital cavity. He drew my attention to an article on Periorbita in Prof. S. E. Whitnall's "Anatomy of the Human Orbit" (1932), in which is described a mass of smooth muscle tissue lying in the inferior orbital fissure, and incorporated with the periorbita, which like periosteum is a sheet of fibrous tissue lining the interior of the orbit and supporting the nutrient arteries of the bone. This muscle, known as the orbital, has been described by H. Müller and is not to be confused with the involuntary palpebral muscle which also bears his name. He calls it the "peri-orbital." It fills the inferior orbital fissure, and in proceeding forward it spreads out in a fan-shaped manner over the orbital floor. Whitnall, from whose interesting and suggestive article I have borrowed freely, ascribes to it a twofold interest. The muscle is found in all mammals except those of the aquatic group. O. Burkard, who has studied it from the point of view of comparative anatomy, holds that it is an important accessory to the lacrimal apparatus. Its function however in this respect is not clear, but in

(Continued from previous page)

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certain animals, in addition to keeping the globe tense, it can protrude the eyeball, as Müller found on irritating the cervical sympathetic nerves.

The second point of interest is a pathological one and concerns the exophthalmos of Graves's disease. It might seem impossible for contraction of the periorbital muscle, which is a vestigial structure, to alter the position of the eyeball by compressing the mobile orbital fat and obstructing the venous circulation, but H. Frund, who has carefully studied the muscle in the new-born, considers the explanation is sufficient. If we admit with him that the periorbital muscle might cause protrusion of the eyeballs, its contractions would primarily have to overcome the pull normally exercised by the recti muscles unless these had become functionally weakened and inefficient. Despite the careful investigations which have been made into the pathology of exophthalmos, there would still appear to be a call for further research into its primary cause or causes.

DUODENOCOLIC FISTULA

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THE rarity of this condition and the recent publication of a similar case¹ prompt me to report the following:

A man, aged 69, was admitted to the Municipal General Hospital on Sept. 28th, 1935, with a history of intractable diarrhoea for three months, preceded by severe constipation. During the last few weeks vomiting had set in. The vomit at first was mostly clear fluid, but later became faecal and very offensive. He had lost a lot of weight and complained of pain across the chest.

¹ Mindline, J., and Rosenheim, M. L.: Duodenocolic Fistula Simulating Idiopathic Steatorrhoea, *THE LANCET*, Oct. 5th, 1935, p. 764.

On examination he looked grey, dehydrated, and wasted. His temperature was subnormal, the pulse- and respiration-rates rapid. Flatulence was marked. There was tenderness all over the abdomen and rigidity over the upper part of the right rectus. No mass was felt. The tongue was thickly "coated" and the breath foul. The heart showed dilatation, and the lungs crepitations at their bases. The pupils were slightly dilated and the knee-jerks sluggish. The stools were frequent and very loose. He went downhill quickly and died 36 hours after admission. While in hospital he had no diarrhoea at all. At autopsy, which I performed a few hours afterwards, the heart was found to be flabby and enlarged, and the lungs congested at the bases. The liver had a nutmeg appearance; the gall-bladder was full and tense and had a puckered cicatrix posteriorly; there were no gall-stones; the pancreas was hard, the prostate enlarged, and the peritoneal cavity clean; the intestines were deflated except the caecum which was ballooned. The hepatic flexure, duodenum, and head of pancreas were matted together and very friable, particularly between the duodenum and the flexure, where a perforation was noticed (probably artificially produced during the handling of the parts). On section a fungating mass was found in the hepatic flexure, ulcerating through into the duodenum and forming a fistula about half a centimetre in diameter. Microscopically the growth was found to be a diffuse adenocarcinoma invading the intestine deeply. A section from the middle of the body of the pancreas showed tissues of the character of intestinal mucosa. No other secondaries were found.

This, then, was a case of duodenocolic fistula due to an adenocarcinoma of the hepatic flexure. A curious point about it was that the patient himself informed me that he had "cancer of the bowel," but emphatically denied being told so by anybody. The stools, although frequent and very loose, were not steatorrhœic, as seen by the naked eye. The condition was not recognised before death, because full investigations were not carried out in the short time during which the patient was seen alive.

I am indebted to Dr. D. C. Lamont, medical superintendent of the hospital, for permission to publish this case.

MEDICAL SOCIETIES

JOINT CONFERENCE ON THE WELFARE OF CRIPPLES AND INVALID CHILDREN

Mr. H. S. SOUTTAR presided over a meeting held last week at the Drapers' Hall, Throgmorton-street, during the joint conference on the welfare of cripples and invalid children.¹ The subject of discussion was

The After-effects of Accidents

Speaking of fractures due to accidents, he said that one of the great difficulties was not repairing the fracture so much as repairing the men and getting them back to useful life. If a man's compensation provided him with a satisfactory income his enthusiasm for work was not great. That did not apply to the child, but even with the child the problem of restoring full function was of the greatest importance. These issues were the more important because the number of accidents was increasing.

Lieut.-Colonel J. A. PICKARD (National Safety First Association) said that accidents of all kinds killed 3000 children annually, half of that number in road accidents, while for every fatal road accident there

were 30 non-fatal ones. More foresight and care on the part of drivers as well as the cultivation of road sense in the child without any great curbing of his natural spirit of adventure, was essential. Of 500 road fatalities to children 386 occurred to children on foot, 103 to those cycling, and 11 to passengers. He advocated a much larger use being made of models and films to teach road dangers to children.

Dr. H. C. CAMERON (Children's clinic, Guy's Hospital) spoke of the effects of accidents on the nervous system. Cerebral damage or compression, or contusion or concussion might occur, and occasionally persistent atrophy of brain or a traumatic dementia. There might result extreme excitability and restlessness, with disturbances of conduct; while injury to the head might be followed by convulsions, and lack of moral control, possibly with epilepsy. Functional disturbances were a very prominent sequel of accidents, because of their terrifying effect, even if the child had merely seen the accident without being involved in it; the attitude of the accompanying adult could influence the child's disturbance, for good or ill. Often a state of unrest was caught from the grown-up person, and might be manifest as mutism or hysterical convulsions.

Mr. S. A. MALEIN, F.R.C.S., (Harlow Wood Orthopaedic Hospital), spoke of the need for coöperation

¹ Under the auspices of the Invalid Children's Aid Association and the Central Council for the Care of Cripples.

between cottage, general, and orthopædic hospitals in this work. The medical profession had long been dissatisfied with some of the results of the treatment of accident cases, but there was now a steady improvement. The British Medical Association Committee on Fractures had attributed the bad results not so much to lack of professional skill as to lack of organisation or faulty organisation. Cottage hospitals were mostly staffed by men with busy private practices, who had neither time nor opportunity to work a fracture service. Orthopædic hospitals were in a specially favourable position to treat fractures. In any scheme formulated municipal hospitals should be included. The best link would probably be one surgeon in charge of the fracture service on the staff of all the associated hospitals, appointing such assistants as were needed.

Dr. ELIZABETH CASSON (Dorset House School of Occupation Therapy) spoke on occupational therapy as applied to recovery of children from accidents. Occupational therapy included any activity, mental or physical, designed to contribute to and hasten recovery from disease or injury. Concentration by the patient on the cure of his condition sometimes retarded it; occupation often resulted in unconscious movement of the injured member. Every muscle action was the result of a stimulus, and a desideratum of occupational therapy was to arouse specific emotions which resulted in the desire to use such muscles as would aid restoration of health; then came the desire to achieve.

Mr. CECIL KNY (late adviser to the Government on industrial development) pleaded for a widening of the existing conception of training cripples. A trainee had to master many functional operations before becoming a skilled craftsman. The radio industry was one well suited to many cripples. He favoured the establishment of an industrial training workshop for cripples, to be run on a business basis; it should have a psycho-technical department for the vocational selection.

Dr. G. MACFEAT (Douglas, Lanark) spoke of a plan of treating cases of accident in the coal industry, based on the co-operation of doctors, employers, and employees, which had received the unanimous approval of the Lanarkshire Orthopædic Association. Efforts were also made to procure suitable light work for those unable to resume their ordinary work.

Dr. J. GREENWOOD WILSON (Cardiff) said that a municipal fracture service would be opened at Cardiff in a few days, with 6 male and 6 female beds, X-ray installation, and a staff consisting of orthopædic surgeon, sister, and nurses. Cases needing long treatment would be transferred to another hospital under the same surgeon.

Dr. C. O. STALLYBRASS (Liverpool) said that in Liverpool street accident cases must be taken to the nearest hospital, whether municipal or voluntary, where the orthopædic surgeon would see them through to the end of their treatment.

Mr. D. R. WILSON (H.M. chief inspector of factories), who presided when the discussion was resumed after lunch, said that last year there were 136,858 accidents in factories, 785 being fatal. The total number of accidents including those on roads and railways and in mines probably reached nearly half a million, and the fatalities 9000 to 10,000. Among young workers the accident rate was persistently higher than among older ones. He had often wondered what ultimately happened to the man disabled in industry, often through no fault of his own.

Mr. J. L. SMYTH (Social Insurance department,

Trades Union Congress) said that for more than a century trade unions had been protecting workers against the hazards of industrial life. After an industry had finished with him the crippled worker was largely left to his union. In this country there was no properly organised accident prevention service, though the great bulk of the accidents were preventable. Those returning to work after long periods of unemployment were very prone to accidents. The injured worker who did not belong to a trade union was often tricked into accepting a quite inadequate sum as total compensation. Home Office statistics showed, in ten years, that the average profit made by the insurance companies in cases of injury to workers was over 12 per cent., and the legal and medical charges 36 per cent., the amount actually paid in compensation being 54 per cent. The trade union movement had framed an improved Workmen's Compensation Bill, which ought to be warmly welcomed.

Mr. GUY DE G. WARREN (Midland Colliery Owners' Mutual Indemnity Company) said that colliery companies in the Midlands had banded themselves together to protect their common interests; among their objects were the promotion of measures to prevent accidents, ill-health, or sickness, and to minimise the consequences thereof. A workman immediately after an accident was anxious to be restored to his work as soon as possible; if, however, his period of incapacity was prolonged he tended to become content to remain on compensation. It should be an obligation on the employer to provide efficient treatment, with medical referees to decide in cases where treatment was refused.

Mr. H. SAMUELS (Industrial Welfare Society) said that the original object of the Workmen's Compensation Acts was to protect the workman against the risk of accident at his work; yet the figures of accidents in industry showed no signs of lessening. The insurance companies did not reduce premiums in favour of employers who took steps to prevent accidents. If a system of "merit rating" of workmen's compensation premiums could be introduced, each firm would have a direct financial incentive to adopt up-to-date methods of accident prevention. With regard to cure, the financial provision given by the Acts was likely to promote cure; yet it was inherent in the system that the injured workman should often have to struggle with the insurance companies. In certain cases the employer could compel the acceptance by the worker of a lump sum in compensation, and then the man's mind became fixed in anticipation of this sum, instead of on getting well. His society welcomed the official committee set up to inquire into the system of medical examination of injured workmen, but his society felt that a mere amendment of the law was not sufficient; there should be national rehabilitation centres for the treatment of industry's daily victims.

Mr. DONALD NORRIS, F.R.C.S. (Insurance Institute of London) said that every year 400,000 claims were made in respect of disability from industrial accidents and diseases, and the annual cost of these was about seven million pounds. About 4 per cent. of people working in factories and railways, 10 per cent. in docks, and 20 per cent. employed in mines were disabled annually. His suggestion was that the main reasons for the present high cost and excessive duration of disability were: (1) inadequate preventive measures, (2) inefficient treatment, (3) difficulties in placing the workers in industry, (4) litigation. His impression was that the treatment of other injuries was not as a rule much better than that of

fractures. A vast total disability could be obviated if trivial injuries were not allowed to become septic. Many thousands of injured workmen attended hospitals thrice a week for massage and electrical treatment which were not effective.

Mr. GEOFFREY PETO, M.P. (Central Council for the Care of Cripples), wanted to see a Workmen's Restoration Act.

Mrs. Councillor DEACON (North Staffordshire), who said she had for long been living on 29s. 6d. a week, protested against the forcing of injured workmen to accept ridiculous sums as compensation, and against the delay before any payments were commenced.

Dr. H. E. MOORE (Crewe) agreed there was often a long delay between the occurrence of the incapacity and the possession of the papers entitling to payment. He joined his plea for the establishment of rehabilitation centres.

Dr. D. MORGAN (Trades Union Congress) thought there should be national rehabilitation centres in which the worker could have confidence. He denied any desire on the part of men to prolong the period of payment of compensation.

LIVERPOOL MEDICAL INSTITUTION

At a meeting of this institution, held on Oct. 24th, with Dr. C. O. STALLYBRASS, the president, in the chair, a paper on

Ephedrine in the Treatment of Enuresis

was read by Dr. R. W. BROOKFIELD. Ephedrine, he said, was generally known to be useful in the treatment of asthma and other allergic states but its value in the treatment of enuresis was insufficiently appreciated. The bladder, like other organs, had a dual innervation. Its nerve-supply was derived through the sympathetic and sacral autonomic (parasympathetic) systems. Relaxation of the internal sphincter and evacuation were favoured by parasympathetic and inhibited by sympathetic impulses. There was reason to suppose therefore that ephedrine, as a sympathetic stimulant, would have a favourable effect in cases of enuresis by contracting the internal sphincter and relaxing the bladder wall. This expectation was fulfilled. His custom had been to give an initial dose of ephedrine hydrochloride half a grain at bedtime, and increase it by gr. $\frac{1}{4}$ every 4-7 days until the enuresis was controlled. Some patients showed a remarkable tolerance to ephedrine; as much as grs. 4 at a dose had been given without any unpleasant results. In many children, on the other hand, side-effects were apt to be troublesome; but these could usually be counteracted. Wakefulness and restlessness responded well to phenobarbitone gr. $\frac{1}{4}$ given with the ephedrine. Vomiting, which occurred sometimes, ceased on reducing the dose. The results achieved warranted the conclusion that ephedrine is the most useful drug at present available for the treatment of enuresis.

Dr. NORMAN CAPON said he had had some good results with ephedrine, and that it was a useful adjunct to the more fundamental treatment of this state, in which both physiology and psychology are disordered.—Dr. P. F. TIXNE condemned disciplinary measures which penalised a child for a condition over which it had no control. Often enuresis was entirely due to the irritation of threadworms in the lower bowel, and cleared up on their removal.—Dr. J. BERKSON remarked on the advantages of ephedrine

over large doses of belladonna, from the standpoint of the general practitioner.

Treatment of Infected Bones and Joints

Mr. R. WATSON JONES, in a paper on modern methods of treatment of bone and joint infections (illustrated by cinematograph), said that so far as wounds were concerned the best results would be got by avoiding the infection. The first requirement, therefore, was immediate excision of possibly infected wounds, hæmostasis, and primary suture with adequate immobilisation. When infection was already established, drainage of the bone or joint was imperative, but the question of after-treatment still remained. Whatever technique was adopted it must be equally easy to control the infection and to immobilise the limb. The incidence of pathological dislocation, of pathological fracture, and of postural deformity was far too high, and these complications meant that surgeons, in their anxiety to control the infection, had neglected to control the position of the limb. The Winnett Orr "no-dressings vaseline gauze plaster method" overcame these difficulties, and was especially valuable in the infected compound fracture. Although infection was responsible for delayed union, it was rarely responsible for non-union, and the frequency of non-union was attributable to the inadequacy of immobilisation which had hitherto been permitted. If the fracture was perfectly immobilised throughout the period of infection, and for several months afterwards, bony union was usually secured. The method was of particular value when extensive granulating wounds extended across joints as in the degloved hand, the degloved foot, after severe burns, or in cases of extensive pressure sores. Skin grafts could be employed beneath the plaster. Deformity was prevented, and because fibrosis of the tissues was minimised, the joints often retained their mobility.

Dr. D. WAINWRIGHT said he did not share Mr. Watson Jones's enthusiasm for the use of plaster in the immobilisation of acute hematogenous infections of bones and joints. He believed that the principles of the Winnett Orr treatment of these conditions could be observed by the use of other methods of immobilisation which had many distinct advantages. The initial treatment differed in no way from that employed by Mr. Watson Jones, but the method of immobilisation by external splinting—for example, the use of a Thomas splint in acute osteomyelitis of the lower end of the femur and upper end of the tibia, and the use of a Jones abduction frame in acute infections around the hip-joint—had the following advantages: (1) the adjacent joint is capable of inspection without removal of splint or dressings; (2) the surrounding skin can be inspected for local spread of infection and subcutaneous abscesses; (3) the external dressings containing the offensive dry pus can be removed without disturbing the granulating surface. Dr. Wainwright said he could personally vouch for the very real anxiety which might often attend these very acute inflammations when the whole limb is completely encased in plaster.

Mr. J. T. MORRISON remarked that the demonstration made the primary treatment of wounds appear altogether too simple. Excision of wounds was a difficult and tedious operation, particularly in cases of bone injury. Such accidents required treatment at least as urgently as abdominal emergencies, and it was strange that the insurance companies had not realised the immense savings they could effect by themselves providing expert hospital

service for the early treatment of such cases as was done in Vienna. During the first six hours operation could be freely undertaken. Thereafter the wound ceased to be merely a contaminated wound and became to an increasing extent an infected wound, with corresponding risk attached to any interference. Referring to the Winnett Orr treatment, Mr. Morrison said he could not see the necessity for complete enclosure of the limb in plaster. Could the surgeon not trust himself or his assistants to keep from interfering with the pack in the wound? There ought in every case to be a definite positive indication for changing any dressing. He agreed with Mr. Watson Jones about the relative unimportance of antiseptics and the great benefits secured by complete rest to an infected wound. He was much impressed with the possibilities revealed in the plaster treatment of patients with severe bedsores.

Mr. BRYAN MCFARLAND said that the best results of compound injuries described at the meeting had been obtained not by the treatment of Winnett Orr, who advocated leaving wounds open, but by primary excision and suture. The speaker had practised this before the Winnett Orr method was introduced, and he still believed that it was infinitely superior. In fact, although Winnett Orr had done one good thing in advocating covering up chronic wounds, whether from bone or more superficial injury, and so had brought people to realise that it was not necessary to keep wiping and dabbing, he thought he had done harm in confusing compound fractures, which were potentially sterile, with acute osteomyelitis, which was essentially infected. For osteomyelitis complete covering with plaster with no window was a bad procedure; for compound fractures it was better to perform primary excision and suture and encase in plaster. If the wound became septic it was much less than if it had been left open, and in 9 cases out of 10 there was primary union without sepsis.

Mr. E. N. WARBLE thought no one could take exception to Mr. Watson Jones's contention that early operative interference is the best treatment for wounds of bones and joints. The more one saw of this kind of case, the more care one took with the primary excision and suture and the better were the results. As for established infection, it seemed to him that the Winnett Orr method had done one great thing; it had relieved patients from a very painful daily dressing. The method was a sound one, but it had its limitations. The wound so treated must be wide and shallow.

ROYAL SOCIETY OF MEDICINE

SECTION OF SURGERY

At the meeting of this section on Nov. 6th Mr. W. SAMPTON HANDLEY, the president, opened a discussion on

Paralytic Ileus in Acute Appendicitis

The condition, he said, was uncommon, but he had chosen to speak about it because he believed that these otherwise very fatal cases were amenable to timely and energetic treatment of a kind he had described in two Hunterian lectures. Jejunostomy, which seemed to find favour, he did not regard as a solution of the problem; nor did he agree that modern methods of medical treatment had abolished the necessity for surgery. In all the cases of paralytic ileus he had seen, medical measures had been

perseveringly tried, and he had been much impressed by the value of the indwelling stomach-tube; but one should beware of postponing operation until it was too late. In operating he did not use spinal anaesthesia, for he feared a dangerous fall in blood pressure.

Even after death "general peritonitis" was rarely found to have spread throughout the peritoneal cavity. One advantage of man's upright posture was this cavity drained to a low point. The dog, without this postural advantage, was killed by peritoneal infection in three days. In man, peritonitis began in the pelvis; even when the septic focus was high in the abdomen, it quickly drained into the pelvis, unless adhesions formed. The pelvis filled with pus from below upwards, and at a later stage hypogastric rigidity supervened. The jejunum, transverse colon, liver, and diaphragm remained uninfamed and unparalysed until the patient became moribund, and this fact was the key to successful treatment. Clinically, therefore, there were three stages of so-called general peritonitis: (1) pelvic peritonitis, (2) hypogastric peritonitis, and (3) the hopeless "text-book" stage. With the first of these gynaecologists were only too familiar: there was acute rectal and vaginal tenderness, but no hypogastric rigidity; there might be vomiting and right iliac rigidity; if the appendix was pelvic in situation it might be felt as a definite swelling. It was on the recognition of the second stage (hypogastric peritonitis), however, that the preservation of life depended. This stage might not last longer than 24 hours.

Intestinal paralysis might arise in the pelvic stage of an upward-spreading peritonitis, but the intestines above the pelvic brim, though distended, were not inflamed. Twenty-five years ago he had applied to this condition the term "ileus duplex" to indicate the presence of two obstructions. Of 3 cases he had treated by ileocecostomy and cecostomy, all recovered; whereas of 10 earlier cases treated by other methods, 7 died. Of those 10, 6 were treated by ileocecostomy alone, and 4 of the 6 died. Cecostomy should be regarded as a routine precaution, though it might not be essential to recovery in a particular case. The failure of ileocecostomy in paralytic ileus contrasted with its success in mechanical obstruction of the lower ileum; the speaker had performed the operation 8 times for mechanical obstruction, and had had 7 recoveries; for paralytic ileus he had done it 5 times, with 4 deaths. In some exceptional cases in which large intestine obstruction was partial or absent, enterostomy might succeed.

When peritonitis supervened in the hypogastric stage the operative problem became different. It was necessary to construct a short but complete alimentary canal above the level of the peritonitic flood. A distended coil of jejunum was anastomosed to the transverse colon, and the caecum was opened. Reflux then took place from the anastomosis along the transverse and ascending colon to the cecostomy. The effect of this on almost moribund patients was dramatic. He had done it five times, with four successes, the fifth patient having died a month later from pyaemia, which bore witness to the intensity of the sepsis. Enterostomy in these cases drained only the small intestine; the large intestine was forbidden by the ileocecal valve to empty itself into the small intestine, and paralysis of the pelvic colon usually prevented relief per anum. A large anastomosis was not necessary; the large intestine recovered rapidly, and the cecostomy wound usually closed spontaneously in a month or six weeks.

A late and unexpected sequel of lateral anastomosis between the small and the large intestine without resection or interruption of their continuity was the development of symptoms resembling those of pernicious anæmia; in his first case the interval was eight years. Physiologists had noted that in animals the operation might ultimately induce fatal anæmia, in a way not yet explained. The necessity of carrying out a secondary operation at a remote date in these cases might appear a serious drawback to the measures he was advocating, but surely it was not too high a price to pay for recovery from a condition which otherwise might prove fatal immediately?

The best results from jejunostomy were those recorded by Seton Pringle—namely, 7 recoveries out of 9 cases; but it seemed clear that he did the operation on a prophylactic basis, without waiting for signs of actual obstruction. This policy was defensible, but only a small proportion of cases with free pus in the pelvis proceeded to obstruction, and few surgeons cared to undertake enterostomy except for reasons which were really compelling. German experience of jejunostomy had been less favourable. Selling Brill, of Philadelphia, said it was proper to assume that if a case of peritonitis with signs of obstruction recovered without operation the peritoneal infection was mastered, the fibrinous exudate was absorbed, and the bowel resumed its normal activity. Recent experience at the Mayo Clinic seemed definitely unfavourable to enterostomy in acute obstruction; J. J. Morton, of that clinic, said it tided over the crisis until the real problem could be handled. In Mr. Sampson Handley's opinion enterostomy usually failed because it could drain and relieve only the small intestine; it was useless to deal with only one of two lethal conditions.

Ileosigmoidostomy seemed a rational procedure for cases in which peritonitis was confined to the pelvis, and where the pelvic ileum was paralysed and the pelvic colon merely paretic, but it did not make provision for the emptying of a paralysed large intestine. After one failure he had abandoned it.

Mr. PHILIP TURNER said he had been very unfavourably impressed by the results of surgery in paralytic ileus, though he had not tried the operation which Mr. Handley recommended. There was more than one kind of ileus, and often it was hard to say what kind a patient had. First, there was a preoperative ileus; secondly, an ileus duplex; and thirdly, post-operative ileus. For this last kind he had done a fair number of enterostomies, but almost all the patients had died, and he had accordingly ceased to use the method. The successful cases were those in which the pus was at a low level and there were a few distended coils of intestine low down. For such he used a large trocar and cannula, through which much gas and faecal matter could come out. He did not leave a tube in. He had come round to a belief in serum in these cases; and he also thought an enema of treacle (not golden syrup, but molasses) was very useful.

Prof. G. GREY TURNER said the mechanical factor in these cases was not always given due attention, and referred to the insistence by the late Mr. Barker, of University College, on the extreme value of excluding a large portion of involved intestine. Many of the cases referred to by Mr. Handley were of a type in which interference was practised too soon and too often. It was hard to know when it was right to operate on these patients who were desperately ill, or when to leave them alone in the hope of a localised abscess forming. As the condition was rare the

measures now advocated were not likely to have much effect on the general appendicitis mortality. Some cases had developed faecal fistula, and immediately afterwards began to get well. He thought the time had arrived for a reconsideration of the whole question of appendicitis, the mortality from which was still far too high. When the trouble was in the lower pelvis, he thought it might be wise to operate in stages, dealing with complications as they arose. In this way the acute stage was survived, and complete removal of the appendix could be done in favourable circumstances. He would like to see a campaign in favour of the earlier and more rational treatment of acute appendicitis.

Mr. VICTOR BONNEY said that when, in 1910, he advised jejunostomy it was for a condition very different from the paralytic ileus which sometimes followed appendicitis. He recommended it for functional intestinal obstruction coming on after any abdominal operation and not dependent on inflammation of the peritoneum. The same functional obstruction occurred after prostatectomy and after peritoneal nephrectomy, and he had seen it twice in pregnancy. It was well recognised as a terminal event in pneumonia, and in his Bradshaw lecture last year he had expressed the view that the condition of the intestine depended on some agent formed in tissues damaged by operation or disease. In that class of case the obstruction started high. Perhaps some such term as "functional peritonitic ileus" would prevent confusion between the two conditions.

Mr. SEYMOUR BARLING (Birmingham) said that in recent years he had drifted towards medical rather than surgical treatment for the cases under discussion. He carried out Mr. Handley's operation soon after the end of the war, and occasionally he had done jejunostomy for them; but on the whole he was hesitating more and more to interfere surgically when medical measures had failed and the patient was in a desperate state. He could not bring himself to carry out such severe operations as anastomosis, though occasionally he had done jejunostomy with some success. His impression was that peritonitis tended to be more erratic in its manifestations than the President had suggested. The danger of trouble arising when the appendix was pointing in the direction of 2 o'clock had been stressed by Mr. Lloyd, after long experience; in these cases there was usually very widespread infection. Ileus was apt to be progressive; distension led to kinking and interference with the circulation, and this to an alteration in the diffusion of gases into the blood. He had always thought that jejunostomy did something to break the vicious circle set up. He believed that many of these patients died of streptococcal septicæmia rather than obstruction. A really irritating brine enema he had found valuable; he had not tried a treacle enema.

Mr. TURNER WARWICK said he had been much impressed by the success of Mr. Handley's combination of ileocolostomy and cæcostomy.

Mr. W. STEWART DICKIE thought that the type of case described by Mr. Handley was not often seen. In such there was no doubt about the obstruction of the ileum, but in reality there was very definite obstruction in the colon. He had been pleased to hear emphasis laid on washing out the stomach. He had no liking for the indwelling tube; a small tube was better than a Crile tube. He had found that a patient who had a rigor usually went steadily downhill.

Mr. W. E. TANNER said that two years ago he had the opportunity of undoing a lateral anastomosis

between the jejunum and the middle transverse colon for ileus. When he opened the abdomen he wondered what the operation had been done for, since the only remnant of a pelvic peritonitis was a single adhesion, half an inch long, joining the intestine to the bottom of the pelvis. That patient had severe anæmia. In one case he had joined the jejunum to the ascending colon for paralytic ileus, and with success; but he passed a long tube through the anastomosis into the small intestine, and it closed in less than a fortnight.

Mr. A. DICKSON-WRIGHT spoke favourably of spinal anæsthesia for vaginal hysterectomy and peritonitis with obstruction. When there were signs that a patient was going wrong he passed a very long stomach-tube, so that its end hung in a bowl, and in that way siphonage took the place of elaborate suction apparatus. He gave the patient two days' rest, with a hot pad and morphia; if that failed he stimulated. In his hands enterostomy had not been a success. Spinal anæsthesia would induce an intestine to contract if it retained the power to do so; but it must be a high spinal, 0.8 c.cm. of 20 per cent. ephedrine being given previously. He thought there was no danger of a fall in blood pressure.

Mr. CHARLES DONALD suggested that the severest form of ileus was not associated with much pus; rather it was accompanied by a focal fibrinous exudate round the terminal part of the ileum.

SECTION OF THERAPEUTICS AND PHARMACOLOGY

A MEETING of this section was held on Nov. 12th, with Dr. DOROTHY HARE, the president, in the chair, when Prof. E. C. DODDS opened a discussion on the pharmacological action and clinical use of

Drugs with a Camphor- and Coramine-like Action

Prof. Dodds said that from the general pharmacological standpoint camphor, its related compound the sodium salt of camphosulphonic acid, and a laevo-rotatory compound which was also known, might be regarded as equally active. One of the main difficulties in studying camphor was its marked insolubility. It might be administered in oily solution and in this form was said to be absorbed from the alimentary tract and, of course, following subcutaneous injection. In the body it was oxidised to an alcohol called camphorol, excreted in conjunction with glycuronic acid; camphorol was inactive and pharmacologically, therefore, the action of camphor could at the best of times only be very brief. Its main action, on the circulatory system, was inconstant, and the same applied to its action on respiration. It was no exaggeration to say that an experienced pharmacologist would find it impossible to support the claims of clinicians that camphor is a powerful stimulant of the circulation and respiration. Its use in collapsed and moribund patients could only be regarded as a placebo. The soluble sodium salt of camphosulphonic acid was no more active.

The compounds of pyridine included the group of circulatory stimulants familiar under the names of nicotine, lobeline and sparteine. One other compound—the β -carboxylic acid diethylamide of pyridine—was more familiar as coramine. All these four compounds had the power of stimulating respiration; from the quantitative point of view, coramine was much the most powerful of them.

The injection of such small quantities as 50 mg. into a 2 kg. rabbit produced a very marked change in respiration. The problem arose whether these compounds acted by direct central stimulation or peripherally through the sino-aortic nerve-endings. Nicotine and lobeline in small quantities appeared to act peripherally, but larger doses act by direct stimulation of the respiratory centre. The action of coramine appeared to be merely central. Unlike camphor, coramine exhibited a very powerful pharmacological effect in small doses by mouth or intravenously, a decided stimulation of the depth and frequency of respiration together with an increase in the force of cardiac contraction, shown by an increase in blood pressure. If given in large doses to animals definite evidence of cerebral stimulation could be seen. Since the action on the heart was entirely through the central nervous system, it was unfair to compare this drug with digitalis. There was also good evidence that coramine constricts the peripheral blood-vessels. Clinically the drug had been used extensively in all conditions associated with shock and depressed circulatory and respiratory states. These included diabetic coma, post-anæsthetic collapse, and pneumonia in certain stages.

Prof. Dodds related his own experience of the drug's action in diabetic coma, when the blood pressure was usually low, and the patient suffered from a very depressed circulation, the force of cardiac contraction being poor. In the terminal stages the pulse was imperceptible at the wrist and the colour of the patient very bad. An intravenous injection of large doses of coramine produced an immediate change; the pulse becomes perceptible and the colour returned. If the diabetic condition could be got in hand, such a patient would surely have a very much better chance than one whose circulation has not been stimulated. Other drugs, such as adrenalin and ephedrine, appear to have little or no effect on this condition.

Prof. Dodds sought the opinion of experienced clinicians on the value of camphor injections and on the question whether the stimulation of circulation by means of drugs of this class was a potent factor in cases of the types mentioned.

Dr. R. A. YOUNG said that it was always a joy when a drug, which had been used empirically and believed in, was established by scientific authority. As to camphor, once physicians had been told that this drug was useless, but many had been glad to use it in cases of pneumonia and felt that it did good. Another group of drugs—of which coramine was a notable example—had established itself clinically; it was gratifying to hear that the empirical experience had a scientific basis. He had used these drugs for many years—at first subcutaneously and intramuscularly, and recently by the intravenous route—and had seen very dramatic results. He believed the effect to be continued and valuable, especially in pneumonia. Repeated use had the disadvantage that patients might become intolerant to the needle and develop areas of cutaneous infiltration, redness, and pain.

Sir WALTER LANGDON-BROWN said that in the days of camphor administration he had thought that the drug just swayed the balance in some cases. He was rather surprised to hear that coramine was a cardiac stimulant, as he thought Bernard Myers's work had revealed a depressant action on the heart. He had abandoned it in favour of cardiazol, which was the best cardiac tonic of recent years.

Prof. DODDS pointed out that coramine only acted on the heart by way of the central nervous system.

Dr. PHILIP HAMILL said he had little doubt that cardiazol acted on the isolated heart, improving its beat. It was valuable for elderly patients undergoing anaesthesia; the depth of respiration and pulse volume were remarkably improved. He wondered whether the effect of camphor in oil was due to the very painful cutaneous stimulus caused by the ether. In animals deeply poisoned by morphia coramine and cardiazol gave striking improvement in a few moments. He asked whether they might not in the long run put an unwarrantable strain on a severely intoxicated heart.

Dr. GEORGE GRAHAM asked what change there had been in the blood pressure of patients in diabetic coma and how long it had lasted.—Prof. DODDS replied that the great thing was to control the diabetic condition; otherwise the patient would die anyhow. He personally had never used these drugs in diabetes.

Dr. E. C. WARNER recalled the case of a man who had swallowed a very large dose of camphorated liniment by mistake; at sight of the stomach-tube he had disappeared down the street and never been seen again. He agreed with Dr. Hamill that the ether in camphor injections might be significant. Myers's experiments had been on the perfused heart, thus cutting out the central effect.

The PRESIDENT said he imagined that the temporary stimulus to the circulation would be invaluable in diabetic coma.

Prof. F. R. FRASER suggested that very few physicians had ever seen a permanent effect from these injections; so far only two speakers had been able to produce examples.

Prof. L. J. WITTS described a case of pneumonia in an elderly woman with an irregular heart; 1 c.cm. of coramine every four hours had undoubtedly been followed by steady improvement.—Dr. WARNER said he also had been confident of the value of coramine in cases of pneumonia; it seemed to produce a steady rise of blood pressure—on an average 5 mm.—every 24 hours. He had also used it for dehydrated children, whose circulation definitely improved for half an hour after a dose.

Dr. PHILIP ELLMAN had had some excellent results with coramine, and believed it to be a very valuable drug.

Dr. C. W. BRASHER had had no results from maximum doses.

Dr. W. A. R. THOMSON suggested that if coramine were such an excellent drug in pneumonia the results ought to be conspicuously better in hospitals where it was used than in more conservative institutions. He asked whether coramine had affected mortality statistics or whether its effects were merely temporary.

Dr. GRAHAM referred to published work showing that pituitrin and ephedrine together raised blood pressure while neither alone had much effect.

Dr. J. W. TREVAN observed that in diabetic coma the blood contained large quantities of aceto-acetic acid which was already stimulating the respiratory centre to its maximum. He asked whether physicians wanted a respiratory or a circulatory stimulant.

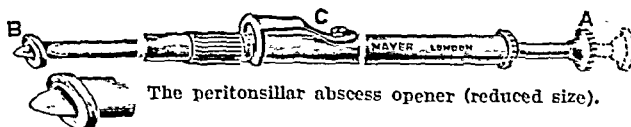
Dr. THOMSON asked if any stimulant other than carbon dioxide and oxygen were needed for pneumonia.—Dr. TREVAN said that the respiratory centre might lose its sensitiveness to carbon dioxide.

Dr. E. A. SCHOTT spoke of coramine as an antidote to Somaifaine, in which it had proved very successful in one case of his.

NEW INVENTIONS

PERITONSILLAR ABSCESS OPENER

THE difficulties often experienced in opening a peritonsillar abscess are overcome by the illustrated instrument. The advantages claimed are: (1) it requires only a small opening of the mouth; (2) the instrument is introduced with the double-edged blade (B) protected in the sheath; it cannot alarm or injure the patient; (3) the blade is kept under tension



by a spring and, when released by pressing lever C, it produces a sharp and instantaneous, almost painless cut. The length of the blade can be regulated by adjusting screw A; it can be taken out for sterilisation.

This instrument is an improvement on one I described in THE LANCET of 1928, ii., 1344. Messrs. Mayer and Phelps (New Cavendish-street, W.) also make a model with an electric lamp fitted into the barrel.

ARTHUR MILLER, F.R.C.S. Edin.

London, W.

TUBERCULOSIS TREATED UNDER FAVOURABLE CONDITIONS

Dr. JACQUES ARNAUD, medical director of the Sanatorium Grand Hôtel du Mont Blanc, is on the whole encouraging about prognosis in pulmonary tuberculosis when the patient can have pneumothorax and/or sanatorium treatment (*Presse méd.*, Oct. 12th, 1935, p. 1581). His material consists of the 522 employees of the *Assistance Publique* sent from the Laennec Hospital in Paris, and treated between 1925 and 1930. They were between 20 and 50 years old, and almost all of them had undergone a compulsory clinical, radiological, and bacteriological examination at the time the disease was first discovered. Not one of them was lost sight of, and it was found that 5-10 years after the disease was first diagnosed 50 per cent. were dead, 40 per cent. were cured and fit for work, and 10 per cent. were unfit for work either because they were subject to small recrudescences of their disease or because of poor health. What subtracts somewhat from the comparatively high recovery-rate of 40 per cent. is the fact that these patients enjoyed exceptional facilities for recovery. As soon as the disease was diagnosed their work ceased, but not their salaries; and there was no sanatorium waiting-list to mock them. The cures were effected at the cost of 1-4 years' treatment—a very different matter to the three months or thereabout with which the sanatorium treatment of an older generation raised such absurdly false hopes. Eighty per cent. of all the relapses occurred within two years of resumption of work, and they were much more frequent among the patients recovering after a rest cure than among those recovering under treatment with artificial pneumothorax. Asking himself how matters can be improved, at the one end by earlier diagnosis, and at the other end by more effective treatment, Arnaud makes two pertinent suggestions. The first is a system of periodic radiological examinations of the whole community with the object of reducing the present high proportion of cases found to be already advanced when first seen. His therapeutic suggestion concerns artificial pneumothorax treatment which 99 of his 522 patients enjoyed. He believes that it could with benefit be extended to at least 40 per cent. of such patients as his.

REVIEWS AND NOTICES OF BOOKS

Clinical Tuberculosis

Edited by BENJAMIN GOLDBERG, M.D., Associate Professor of Medicine, University of Illinois College of Medicine; formerly Director, Chicago Municipal Sanitarium. Philadelphia: F. A. Davis and Co. 1935. 2 vols. Pp. 1541. \$22.

WITH the collaboration of 33 other contributors Dr. Goldberg has produced a monumental work. In a book of this composite nature the quality of the individual chapters is bound to vary and some repetitions and even a few contradictions are to be expected; but by allowing his contributors to speculate freely on hitherto unsolved problems, instead of only recapitulating well-attested facts, Dr. Goldberg has greatly added to the reader's interest, and his editorial supervision has been so wisely exercised to give the book an individuality of its own.

Of the opening chapters in the section on pathology one of the most interesting is that on bacteriology by Dr. R. R. Metchnikoff. He is an ardent believer in the new school, which no longer regards the tubercle bacillus as an unvarying entity, but as an organism possessing a life-cycle composed of several stages some of them non-acid fast and almost avirulent but capable of regaining virulence. The existence of gonidial reproductive forms, some of filter-passing dimensions, are also accepted. Dr. Mellon considers "allergy" a much overworked word and prefers to attribute the great variations in the clinical course of tuberculosis to the type of the infecting organism rather than to factors connected with the host. Further research will obviously be required before such views can be accepted. In the following chapter, on allergy and immunology, Dr. K. Robert Koch and Dr. Mellon give their opinion of BCG; they consider the crucial question here to be whether the human body will prove itself in course of time to be a suitable medium for the dissociation of the virulent from the avirulent type. Most present evidence is against this possibility, but animal experiments have not given categorical evidence for the efficacy of the culture as an immunising agent. The chapter on pathology by Dr. R. H. Jaffe, which follows orthodox lines, is clear and well illustrated. Mr. P. N. Coryllos contributes a stimulating chapter on pathological physiology; in this he discusses such questions as: Why are cavities spherical in the living and irregular in shape in the dead? What is the mechanism of their closure or occasional rapid increase in size? In answering them he shows himself to be in agreement with those who believe that many of these cavities contain air under pressure. Holding that the walls of cavities have already been studied thoroughly, he has directed his researches to their bronchial outlets which he considers to be the most important structures in the evolution of cavities. He finds that these draining bronchi always show some tuberculous lesions, varying from allergic oedema to caseous or productive changes. The lesions tend to produce stenosis of the bronchus, and a check valve mechanism may develop, allowing free ingress of air but not free egress, with the result that the cavity will increase in size. Complete bronchial obstruction will cause the cavity to shrink and disappear leaving an atelectatic portion of lung. Owing to the tubercle bacillus being a strict aerobe, requiring large amounts of oxygen for life and growth, closure of the draining bronchus should facilitate

healing. Diminished oxygenation in the affected areas of a surgically collapsed lung is considered to offer a rational and physiological explanation for the good results of this treatment. The theories put forward by Mr. Coryllos receive confirmation in a subsequent chapter on classification in which Drs. Ornstein and Ulmar describe, with X ray illustrations, "check-valve" cavities which close and subsequently reopen. One of these chapters is of particular interest; a cavity was seen to close following a hæmoptysis, the blood clot obstructing the draining bronchus was expectorated and the cavity reopened. The section on diagnosis, besides describing the physical and laboratory methods in general use, includes a full and well-illustrated chapter on X ray findings by Dr. H. E. Potter.

In dealing with treatment, Dr. Goldberg shows a preference for well-ventilated rooms rather than open air. Patients frightened of the night air are assured that the only night air that is bad is the air of the night before. The importance of rest is well emphasised, all fresh cases being given a minimum of six weeks in bed however normal the temperature and pulse. Later on graduated exercise is preferred to excessive rest as the production of flabby, fattened patients must be avoided. In a chapter on salt-restricted diet Dr. E. Mayer quotes the experience of Gerson, Hermannsdorfer, and Sauerbruch, who consider that by this treatment allergy may be reduced. Although good results are claimed the method is not an easy one to carry out, and it is to be hoped that the much simpler method of Keining and Hopf who replace NaCl by an equilibrated salt containing K, Ca, and Mg will prove of equal therapeutic value. European readers will be surprised at the scant mention of gold therapy, which Dr. Goldberg dismissed in half a page. Evidently the unfavourable report of Ambersen, McMahon, and Pinner unduly discouraged further investigations of this remedy in America. Tuberculin treatment is only considered justifiable in localised, quiescent apical lesions.

A large section (368 pages) is allotted to collapse therapy. In this chapter on artificial pneumothorax Dr. R. C. Matson says the treatment is still not used sufficiently often or sufficiently early. He also emphasises the importance of abandoning an unselective collapse unless adhesions can be severed. When an adhesion is too vascular to be divided, coagulation by diathermy near its parietal attachment often results in satisfactory stretching with subsequent refills. Oleothorax is said to give good results in about 60 per cent. of selected cases of pyopneumothorax. When employed to prevent expansion of the lung the best results are obtained where the collapse is selective and the worst where compression is necessary. Phrenic neurectomy was only used in cases in which a pneumothorax had been attempted; in 52 per cent. of these so much improvement resulted that thoracoplasty was considered unnecessary. Selective surgical apical collapse is the subject of a further chapter by Mr. Coryllos, who concludes that the results so far obtained with apical thoracoplasties are by far the best of all methods of surgical collapse. Scalenotomy was not found to be effective in closing apical cavities, and after a review of the literature of apicolysis the conclusion is reached that if cases are properly followed up cures prove to be less than 20 per cent. In discussing total thoracoplasty Mr. C. A. Hedblom considers

the higher mortality found by some authorities with right-sided cases to be due to the effect of the one-stage operation on the heart. This operative mortality may be much reduced if the operation is performed in three or more stages. The chapter on tuberculous enterocolitis by Dr. Goldberg contains an illustrated description of the early radiological diagnosis of that condition following the work of Brown and Sampson. For the control of diarrhoea injections of calcium gluconate, at first daily, later weekly, are recommended. Tuberculosis and pregnancy is the subject of an interesting chapter by Dr. F. H. Falls, who believes that, contrary to former belief, pregnancy, labour, and the puerperium have little or no effect on the course of tuberculosis. In an instructive chapter on diabetes and tuberculosis Dr. R. W. Keeton points out that, whereas in non-diabetic adults only 3 to 5 per cent. present the acute broncho-pneumonic type of phthisis, the proportion is no less than 46 per cent. in diabetics who behave in this respect like primitive races in whom production of fibrous tissue is deficient. In the management of the diabetic tuberculous insulin, combined with a high carbohydrate diet, is advocated; feeding with glucose alone being necessary in the severely ill.

Every serious student of tuberculosis will appreciate this important book.

Kurz- und Ultrakurzwellen

Biologie und Therapie. By PAUL LIEBESNY, Leiter der Physikalisch-medizinischen Abteilung des Physiologischen Instituts im Allgemeinen Krankenhaus in Wien. Berlin: Urban and Schwarzenberg. 1935. Pp. 208. RM.8.50.

THE central matter of dispute among those at present interested in the biological and therapeutic effects of ultra-short waves is the question of specificity. Whether, that is to say, the oscillations merely produce their observed effects thermally, by virtue of the random molecular movements produced when they are absorbed, or whether there are specific effects, produced only by oscillations of certain frequencies, and unconnected with the accompanying heat evolution. Some see in ultra-short wave therapy only an extension, and in certain respects an improvement, of the more familiar diathermy; others, like d'Arsonval himself—the first investigator of the biological effects of the solenoidal field—believe that it is essentially a new therapy, involving specific effects often antagonistic to the thermal ones, and not to be explained even by the different distribution of heat produced by the two methods. Dr. Liebesny belongs to the latter group, and he holds the extreme view, very concisely stated in his preface, that ultra-short wave therapy must always be “athermal”—must always be carried out under such conditions that no appreciable temperature rise takes place.

Dr. Liebesny's book, then, is to be welcomed as a readable and fairly sober exposition of the various specific effects which are said to occur: in clinical practice, where no doubt anything can be proved, as well as in far simpler systems, where at least a rigorous experimental procedure can be followed—even if a perusal of these pages suggests that it has not in fact invariably been followed. Often, however, the methods used have been undeniably ingenious, not least so in the case of Dr. Liebesny's own investigations, which are here described in some detail. And it is worthy of mention that in some instances at least

there is full theoretical support for the statement that certain observed effects could not conceivably be due solely to heat production—notably in the results of irradiation of micro-organisms.

So much for the central thesis of the book, with its extensive exposition of clinical and biological results. It should be added that the author does not exclude from consideration those applications, such as the production of artificial pyrexia, which are unquestionably due to heat production alone. As far as one can tell, the objectivity of his clinical protocols is never diminished by his adherence to a particular theory of the mechanism of short wave action.

Grundriss der Kurzwellentherapie

By Ing. Dr. WOLFGANG HOLZER, Assistent am Physiologischen Institut der Universität Wien; and Dr. EUGEN WEISSENBERG, Leiter der Kurzwellenstation an der Universitätsklinik für Nerven- und Geisteskranken in Wien. Vienna: Wilhelm Maudrich. 1935. Pp. 189. 1.8.

THIS book is divided into two parts, unequal in length and in quality. The first, by Holzer, gives a detailed account, which has all the virtues of scientific precision, of the physical and technical foundations of the production and action of ultra-short waves. The second, by Weissenberg, is a brief sketch of the present therapeutic application of these waves—extensive enough, however, to exhibit the difficulties with which clinical observation of this type has to cope.

Holzer introduces the reader to the physical aspect of the subject in a straightforward manner, without taking any special knowledge on the reader's side for granted, and yet without unduly repeating school-book information. After a simple account of the nature of oscillations, he presents with the utmost clarity the elementary properties of electrical circuits, the theory of electro-magnetic fields, and the electrical properties (specific resistance, dielectric constant) of biological material. Then the energy absorption of such materials, and its dependence on wavelength, is discussed, with an incidental discourse on the dipole theory of Debye. These preliminaries are followed by an entirely relevant review, in physical terms, of the question of specificity. The second chapter gives theoretical and practical details for the measurement of wave-length, absorption, and current intensity. The third chapter introduces short-wave technique: calculation of the constants of oscillatory circuits, advice for the construction of short wave generators and of accessories for experimental purposes. Finally, the mode of operation of powerful generators, and the precautions which have to be observed, are described. The bibliography is excellent, and in general this section of the book is to be recommended both for the originality of many of the technical details described and for the excellence of the diagrams.

Unfortunately the medical section of the book, a mere summary of the range of application of ultra-short waves, cannot be equally praised. The paragraph on the treatment of nervous diseases, in which Weissenberg is an expert, will be of interest to the specialist; the author insists on the potency of exceedingly small doses, a point on which he lays undue stress in his more recent publications. The reader will regret the omission of an adequate discussion of the experimental, physiological, and pathological basis of treatment, for which the author refers his readers to Schliephake's book.

Short Wave Therapy

By ERWIN SCHLIEPHAKE, M.D., Privatdozent for Internal Medicine at the University of Jena. Translation by R. KING BROWN, B.A., M.D., D.P.H. London: Actinic Press Ltd. 1935. Pp. 238. 21s.

THE ease with which ultra-short radio waves penetrate the body has established a place for valve generators of high-frequency oscillations in the armamentarium of the physiotherapist. This new agency is to be welcomed, since it utilises continuous waves of sinusoidal form at selected frequencies, whereas the older diathermy machine employs successive trains of damped waves involving at least two frequencies of varying form. Only by the utilisation of continuous waves of pure form can our knowledge of the mode of action of definite frequencies be analysed. Further, by the employment of very high frequencies, 20 to 100 million cycles per second, it is unnecessary to place the leading-in electrodes on the patient's skin, so that the ratio of deep to superficial treatment can be considerably increased. To accomplish this, use is made of the condenser field as suggested by Schereschewsky. Schliephake realised the immense possibilities of the application of the condenser field to the treatment of disease and he has earned the gratitude of physiotherapists for his clinical experiments both on himself as well as on patients. In his book, he presents his considered judgment on the use of ultra-short waves and the enthusiasm with which he tested out these very high frequencies on many different diseases maintains the reader's interest. His experience on the clinical uses of these short waves may well guide any who contemplate the acquisition of an ultra-short wave generator. Good generators are available in this country and some have the advantage over imported models that they possess a rectified high-tension supply instead of the raw alternating current which actually gives modulated waves. Schliephake's brief statement of the physical principles involved in the design of high-frequency oscillators is not presented with the same expert knowledge, but his account of biological experiments will serve as a useful guide to the further investigation of the action of very short waves.

Dr. King Brown's translation has appeared at an opportune moment since there are, as yet, no standard books on ultra-short wave therapy in English. He is to be complimented on producing it so quickly, but the translation would have been more readable if it were not so tied in its construction to the original of Schliephake. It is to be hoped that in any future edition greater freedom will be exercised so as to give the usual everyday phraseology of medical science. The bibliography has been curtailed which is unfortunate in so new a subject. A few misconceptions of a scientific character have arisen as a result of translation, but with this small reservation the book can be recommended as a good introduction to the subject.

Morbus Gallicus

A Bilingual Edition of the Poem *Syphilis Sive Morbus Gallicus* by Fracastoro of Verona. By LEONA BAUMGARTNER and JOHN F. FULTON. New Haven: Yale University Press; London: Humphrey Milford, Oxford University Press. 1935. Pp. 157. 22s. 6d.

THE reawakening of interest in Fracastoro's poem on the Morbus Gallicus has led to the issue of no

fewer than four independent translations in English since 1928, and the revival is further emphasised by the publication of this exhaustive bibliography which includes all the 100 known editions of Fracastoro's unique work. The title of each of these is reproduced in a modified quasi-facsimile elaborated by copious and erudite notes on authors and printers, and descriptions of the known copies of the more interesting older editions. The beautiful illustrations of title- and text-pages add greatly to the attractions of this admirable example of specialised scholarship.

The Hair and Scalp

By AGNES SAVILL, M.A., M.D. Glasg., M.R.C.P.I., Consulting Physician, Fitzroy-square Skin Hospital; formerly Physician, St. John's Hospital for Skin Diseases. London: Edward Arnold and Co. 1935. Pp. 288. 12s. 6d.

THIS book will make a wide appeal to those concerned with the preservation of the natural state, and treatment of disorders of the scalp and hair. Although primarily influenced by the teachings of Sabouraud, Dr. Savill affords continual evidence of her own wide experience and powers of observation. She has provided much information not to be found in contemporary text-books of dermatology. An entirely new departure is a section on the molecular structure and elastic properties of hair, contributed by Mr. W. T. Astbury, lecturer on textile physics at Leeds university. This interesting if somewhat abstruse study has only lately been rendered possible by X ray photographs and their mathematical analysis. At the other end of the scale is the chapter on the care of the hair, which will enlighten the physician in the mysteries of the "permanent" wave, the nature and function of "setting" lotions, and the correct methods of combing and brushing. But it must not be thought that woman alone receives consideration.

The major portion of the book is devoted to diseases of the scalp and hair, and male baldness of the common type is discussed at length with copious allusions to the work of Sabouraud, and later authorities in Germany. This section deserves praise for the effort made to render the prognosis less gloomy than the facts, or rather their absence, have hitherto seemed to justify. A detailed account is given of alopecia areata, and here Dr. Savill might be charged with a measure of inconsistency. While she warns us that "the honest medical man knows that he has not greatly influenced the course of the disease" she proceeds to offer us no less than four closely packed pages of alternative treatment, in the course of which she appears to claim at least two cures in obstinate cases of the disease. Her chapter on hair dyes is excellent and should be read by all who practise the art, and even more by those who have, occasionally, to rectify the results. One is glad to note that yet another author condemns the use of X rays in the treatment of hypertrichosis. A short appendix contains formulæ frequently required in the treatment of pityriasis, psoriasis, greasy hair, and so forth. Some of these are prescribed according to the metric system, others in the vernacular style, while a third set seems to need translation from the French. These small inconsistencies will doubtless be abolished in a future edition.

Dr. Savill is to be congratulated on a sound and informative work.

THE LANCET

LONDON: SATURDAY, NOVEMBER 16, 1935

THE CATHARTIC FUNCTION OF GENERAL ELECTIONS

MANY people who find in their work or their hobbies a satisfying outlet for their energies regard politics, and particularly general elections, as a nuisance and an interruption of the smooth and orderly run of life. They are apt to refer to them as recurring emotional crises, on the assumption presumably that political life should be conducted solely by reason in a dispassionate spirit. Observation shows that frequently those who are led by temperament to this opinion, when they do go to the polls, commonly use their opportunity to protest *against* something rather than to vote for something else. It is not easy to be dispassionate and at the same time reasonable about politics. When political science was speculative it was thought that men were by nature free, equal, and independent, and that they divested themselves of their natural liberties and put on the bonds of civil society by making an implicit agreement or social contract. If this were true the function of politics would indeed be reasonable, and Parliament would resemble a court of arbitration between the sovereign power and the people. Such is the sober wish of those non-political people to whom reference has been made, but they share the illusion of a past age. The modern trend of thought in political science is to look in another direction for a key to the understanding of the riddle of man's spasmodic interest in politics, or his dislike of it. It is obviously a far more complicated thing than any social contract, or, if we turn to biology, than the stable associations of bees or beavers, or the periodic herding of animals under the urgency of instinct.

The researches of modern psychology assist us here; they show that the great need for social life is due to the long period of dependence which characterises the young of the human species, and to the plasticity of the emotional life at that time. The desire to be a part of the community is implanted so deeply that the person who is utterly indifferent to the claims of the group is generally regarded as abnormal. The tie with society is not a contract, as LOCKE, BECCARIA, and ROUSSEAU taught, nor an expression of reflex obedience to instinct, but is highly charged with emotions of all kinds. A further complication lies in the fact that man displaces on to society many of his personal desires and ambitions. Something more than an aggregate of strength

results from the formation of a group—viz., an outlook on the future. This outlook is not a forecast based on careful observation and inference, but is a resultant of the hopes and despairs of those who form the group. Modern psychology asserts that the hopes and desires which mainly influence the electorate are not conscious ones, but are reactions which go on beneath the surface of the mind and are not influenced by reason. In his political life man responds to his personal disappointments by an attack on the Government, which represents society, and places his trust in a new and sometimes untried body of men, because he hopes from the unknown something better than the past has been able to achieve. Politics provides an outlet for pent-up personal emotions, and is a kind of safety-valve which tends to keep down the pressure of the disruptive forces.

There are great advantages as well as grave dangers in this mechanism for the de-tensioning of the mind. It leads men to the highest altruism, when they are swayed by hope and generosity; but in another mood they will ruthlessly destroy the very object they had the moment before revered. While men have these explosive and unstable unconscious-emotional forces within them, the psychologists tell us, politics will be subject to violent oscillation, and there will always be a danger of internal disruption; but the danger is diminished if there is a way of making the outlet adequate. In England this is achieved by a peculiar political device: the part of the emotional life of the individual that is concerned with politics is split into two, one portion is reserved for the Crown and all that it implies, the other for the Cabinet. Discontent, however active, does not destroy the whole of the sovereign power but only a replaceable portion of it. The Government can be turned out without disrespect to the Crown. Loyalty and anti-government feeling unite in cabinet making and in cabinet breaking. But the throne is safe so long as the Cabinet is felt to be worth attacking; the aggressive feeling is real and will not be satisfied with the figment of a Cabinet.

Apart from all its merits in providing an executive organ of government, our constitution affords a good remedy against the dangers of the accumulating discontent, which leads to revolution, by providing an efficient cathartic in the form of general elections.

PARENTERAL LIVER IN THE TREATMENT OF SPRUE

WE are laboriously learning something of how the different types of deficiency disease are brought about. The aetiological mechanisms involved in their production are gradually becoming disentangled and their exact relations in various morbid states are being determined. In the process a close relationship, already suspected on clinical grounds, between certain disease entities has been confirmed. For example, a recent detailed investigation of tropical sprue in Porto Rico by Dr. W. B. CASTLE and

three collaborators once again corroborates the many points of similarity between sprue, pernicious anaemia, and pellagra.¹ Indeed it was beyond their clinical ability to decide whether certain of the patients under observation were suffering from sprue or pernicious anaemia. They go so far as to state definitely that they can establish no distinction between the character of the blood picture found in the two conditions, whereas so experienced an observer as N. HAMILTON FAIRLEY² was able to find one. They do not appear to have discovered among their cases of sprue any evidence of the disturbance of calcium metabolism which is so constantly present in idiopathic steatorrhoea, a disorder which THAYSEN³ maintains to be identical with tropical sprue. They conclude that in sprue as in pernicious anaemia there is involved the failure of a reaction between an extrinsic factor in the diet, associated in several substances with vitamin B₁₂, and an intrinsic factor, present in the gastric contents of the normal person. This failure of reaction may be attributable to lack of extrinsic factor due to deficient diet, or to lack of intrinsic factor due to failure of gastric secretion. In addition, difficulty in the absorption of hæmopoietic factors from the alimentary canal is also present in some patients. A formidable amount of experimental evidence is marshalled to support this view. Analysis of the diets of the patients investigated showed them to be distinctly deficient in sources of extrinsic factor—namely, meat, eggs, and whole cereals. In many patients a lack of power on the part of the stomach to secrete intrinsic factor was demonstrated; in others, no reaction to the oral administration of liver extract was obtained though parenteral therapy was successful, pointing to a failure of intestinal absorption.

CASTLE and his fellow workers suggest, since the administration of defective diets to animals may produce not only a megalocytic anaemia but also profound morphological and physiological derangements of the alimentary tract, that the same may hold true in sprue and in pernicious anaemia. A deficiency of the extrinsic factor or some related substance may originally be responsible for diminishing the intrinsic factor secreted by the stomach or for producing other degenerative changes leading to intestinal impermeability. The original effect of a deficient diet would therefore subsequently be enhanced by the development of failure in alimentary secretion. In this study of sprue the possible influence of deficient diet is made obvious; in pernicious anaemia, however, apart from rare cases following operative interference, the mechanism leading to a disappearance of intrinsic factor is still not clear. Further, if this attractive hypothesis is correct, it is difficult to understand why a hypochromic rather than a hyperchromic anaemia develops in certain other anaemias where a somewhat similar dietary deficiency has been shown to be of extreme ætiological

importance, as, for instance, in the anaemia associated with hookworm infestation⁴ and in idiopathic hypochromic anaemia.⁵ The possible influence of diet on gastric function, and therefore indirectly on hæmopoiesis, may possibly prove as significant as its more direct and obvious effect, but clearly requires further investigation. Beyond dispute, anyhow, is the value of adequate dosage of liver extract, preferably given by the parenteral route, in the treatment both of the intestinal and hæmopoietic disorders of sprue. Larger doses are often required in sprue than in Addisonian pernicious anaemia, and even then the response of both reticulocytes and red cells is rather less in the former than in the latter. But CASTLE and his fellow workers believe that in every patient not proved to have a complicating infection both intestinal and hæmopoietic improvement follows the administration of parenteral liver in adequate dosage, if necessary with the addition of iron, without the use of any special diet. These views on treatment conflict with those of FAIRLEY,⁶ who not only insists upon the necessity of giving a high protein diet to all patients with sprue but is also inclined to consider oral preparations of more value than parenteral ones. But the observations from Boston are so well controlled and detailed as to suggest that provided adequate amounts of a known potent liver preparation are given, the prognosis for a patient with sprue is as good as that for a patient with pernicious anaemia irrespective of dietetic treatment.

"SURGEON"

WHAT is a "surgeon"? Has any untrained person the legal right to call himself a surgeon or does the word exclusively connote a duly qualified practitioner? The Medical Act of 1858 (as no registered surgeon needs to be reminded) was passed for the express purpose of enabling the public to discriminate between the qualified and the unqualified. With this purpose in view Section 40 protects several professional descriptions, one of which is "surgeon." Yet this title, which was meant to be the badge of duly qualified professional men, has been usurped by the unqualified. The latter indeed are claiming that a successful usurpation, lasting over the past 20 years or more, gives them a species of prescriptive right to-day. They prefix some such adjective as "osteopathic" or "manipulative" to the noun "surgeon" and declare that this hyphenation keeps them on the safe side of the prohibition in Section 40. This dubious position is due to the fact that the language of the statute is less clear than its purpose. A certain obscurity, partly accounted for by inadequate reporting, has clouded some of the decisions by which the section has been interpreted. But the clouds are being dispelled. In *Whitwell v. Shakesby*⁷ a defendant who labelled himself

¹ Castle, W. B., Rhoads, C. P., Lawson, H. A., and Payne, G. C.: *Arch. Internal Med.*, 1935, lvi., 628.
² *Trans. Soc. Trop. Med. Hyg.*, 1930, xxiv., 131.
³ *Quart. Jour. Med.*, October, 1935, p. 359.

⁴ Rhoads, C. P., Castle, W. B., Payne, G. C., and Lawson, H. A.: *Medicine*, 1934, xiii., 317.
⁵ Davidson, L. S. P., Fullerton, H. W., and Campbell, R. M.: *Brit. Med. Jour.*, August 3rd, 1935, p. 195.
⁶ *Trans. Soc. Trop. Med. Hyg.*, 1934, xxvii., 345.
⁷ *THE LANCET*, 1932, i., 1112.

"bonesetter, osteopathic physician and surgeon" was held to have infringed the statutory prohibition. And now in *Jutson v. Barrow*⁸ a defendant who labelled himself "manipulative surgeon" has met the same fate. Captain BARROW stated in the witness-box that he selected the adjective "manipulative" for the very purpose of directing attention to the fact that he was not a duly qualified surgeon within the meaning of the Medical Act. If any other name would properly describe his work, he would gladly adopt it. The Lord Chief Justice was evidently unimpressed by these protestations. Lord HEWART thought there were plenty of other descriptions—"bonesetter," for instance, or "manipulative healer"—which would achieve Captain Barrow's object. Why did unqualified men select the word "surgeon"? Was it not because of its well-known and particular connotation and association? The thing which makes the name "surgeon" appear to be attractive and useful to them, concluded Lord Hewart, is precisely the thing which Section 40 was enacted to prevent; "if this gentleman is, as we must take him to be, sincere, there are many ways of telling the public that he is not a surgeon other than the way of telling the public that he is a surgeon."

In *Jutson v. Barrow* Mr. NORMAN BIRKETT, K.C., appearing for Capt. Barrow, seems to have conceded that the use of the word "surgeon" by itself would imply that the person who used it was a registered surgeon under the Medical Act. Mr. Birkett, arguing that the addition of an adjective can change the meaning of the noun, sought to find analogies in the names "dental surgeon" and "veterinary surgeon." These names have, of course, their own statutory significance and protection. Lord Hewart would not allow any such magic to the epithet "manipulative." Every surgeon works with his hands; "to say that he is a 'manipulative surgeon' is as if it were to say he is a 'surgeon surgeon.'" At the end of the case the Lord Chief Justice added his own personal opinion that it was hard to imagine any adjective which, being added to the title "surgeon," would excuse the use of the word "surgeon" by a person not registered or recognised under the Act of 1858. Such observations clarify the legal position. The Medical Act surely intended that an offence against Section 40 would be established if it were proved first that someone had intentionally described himself as a "surgeon" and secondly that his name was not to be found on the Medical Register.

The recent decisions seem to show that this intention is being realised. "In the present case," said Lord Hewart in *Jutson v. Barrow*, "the only fact which needed to be found was: did this man call himself a surgeon?" Capt. Barrow was admittedly not registered under the Medical Act; he did not hold, and had never held, any medical degree. The obscure phrase "wilfully and falsely," which occurs in Section 40, does not require that the defendant must be proved to have acted with intent to deceive. Nobody

suggests that Capt. Barrow had any fraudulent intent. The Medical Act does not prevent him from practising; it merely stipulates that he should not confuse the public mind by using titles which the Act reserved for the use of duly qualified practitioners. The scheme of the "Council of Physical Medicine" may be mentioned in this connexion. It proposed to institute a Register for all practitioners of the healing art who are not already registered under the Medical Acts. It would admit to this Register all existing "osteopaths, chiropractors, naturopaths, manipulative surgeons, botano-therapists, herbalists, and radiologists," and for a fee of seven guineas it would grant each registered member a certificate "which will entitle the holder to be described as a Doctor of Physical Medicine and to use the initials of D.Ph.M." Is not this just the point which Lord Hewart has been criticising? "Doctor of Medicine" is, like "surgeon," one of the well-known professional descriptions which Section 40 of the Medical Act reserves for the duly qualified practitioner. "Doctor of physical medicine" seems to bear much the same relation to "doctor of medicine" as "manipulative surgeon" bears to "surgeon."

EPIDEMIOLOGY OF AN ISLAND

THE issue of a report on the public health in Iceland in the year 1933 allows some interesting comparisons to be made between the vital statistics of this little and relatively isolated community, mainly devoted to a pastoral and fishing life, and those of our own highly urbanised population for which the Registrar-General has recently issued the statistics of 1934.¹ Iceland has not been free from the world-wide economic depression and unemployment has been extensive. In spite of this the death-rate and infant mortality-rate have both been very low. The latter was in 1933 only 43 per 1000 live births, well below the 59 recorded in England and Wales in the following year. In Iceland, according to the reports of midwives, 85 per cent. of the infants born in the year were breast-fed, 5 per cent. partially breast-fed, and only 10 per cent. bottle-fed. It would be interesting to have comparable figures for this country. The stillbirth-rate of Iceland is also remarkably low, being only 21 per 1000 births, whereas in England and Wales its level since notification became compulsory has varied very little from 40 per 1000. The maternal mortality experience of the smaller country is also very favourable, the rate being 2.8 per 1000 live births in 1933 compared with 4.4 in England and Wales in 1934—though certification and grouping of the cause of death may complicate the comparison.

On the other hand, to the disadvantage of the rural community is its mortality from tuberculosis. The crude death-rate from all forms of tuberculosis, 1.5 per 1000 inhabitants, is nearly twice the rate in England and Wales, and in 1933 accounted for 15 per cent. of all deaths compared with only about

⁸ Ibid., Nov. 2nd, 1935, p. 1023.

¹ See THE LANCET, Nov. 2nd, 1935, p. 1034.

7 per cent. in this country. For a proper assessment of the difference standardised rates, or rates at ages, are necessary, but are lacking from the Iceland report. It is possible that the advantages of rural environment are severely offset by a lower standard of living. To check the spread of the disease a systematic search has been planned for carriers of tubercle bacilli and sources of infection. An initial investigation by S. SIGURDSSON in a little fishing village is reported. Here there had been a considerable spread of tuberculosis in recent years, imported, the evidence suggests, by immigrants from other parts. Pirquet tests were made on all the 77 children (aged 1-16) in the village; the 14 (or 18 per cent.) positives lived at the houses of the infection carriers or in their vicinity. Amongst 160 persons clinically examined two carriers of infection were found and it is concluded that these should be removed to a sanatorium, a strict eye kept on the Pirquet-positive children, and those at present negative retested annually to determine when and where they acquire infection. In some schools of the country a daily dose of cod-liver oil is administered, and this practice is growing. It will be interesting to see what effect this has upon the general level of health and the incidence of infectious diseases. Judging by the notifications some of the common infectious diseases of childhood disappear, rather surprisingly, for a year or two. For example, in 1924 3802 cases of measles were registered, in 1927 only 1, in 1929 a further 3026, in 1930 and 1933 none at all. Similarly there were no notifications of whooping-cough throughout 1932 and 1933, but over 6000 in 1927. Over the ten years 1924-33 the annual number of cases of mumps ranges from 0 to 1858, of German measles from 4 to 449, of scarlet fever from 5 to 624, of acute poliomyelitis from 2 to 463. Chicken-pox appears to be more constant, never falling below a hundred cases and only twice exceeding two hundred.

Some six years ago we suggested that the island² should prove a fruitful field for epidemiological investigations. The present interesting vital statistics confirm this opinion. For example, the figures suggest that diseases such as measles, whooping-cough, and mumps are unable to attain a permanent endemicity in Iceland, and epidemics are therefore limited by the exhaustion of all the available susceptibles and do not reappear till the disease is reintroduced from outside the island. It should not be difficult to collect data to prove or refute this suggestion. Again, although in the past Iceland has been decimated by small-pox, yet no case has been reported for many years. Vaccination is compulsory in the island. It would therefore be interesting to try and discover if the complete freedom from small-pox is due to vaccination or to the isolated position of the country. Few purely epidemiological investigations have been undertaken in Iceland, apart from NIELS DUNGAL's interesting observations³ on Schick immunity. DUNGAL found that in

1931 the Schick immunity of the children in the island was low, and did not rise significantly with age until they were thirteen, when the percentage of Schick-immunes rose suddenly from 17 per cent. at twelve years to 38 per cent. at fourteen years of age. Unfortunately the latter was the oldest age-group tested. This sudden step in immunity can be attributed to an outbreak of diphtheria which occurred ten years previously in 1921 and immunised the children who were over twelve years of age in 1931. On the other hand, those who oppose the latent-immunisation theory could equally well attribute this peculiar step up in immunity at the age of twelve to fourteen to a natural genetic growth process associated with the onset of puberty. The population of Iceland is about 112,000—which is half the strength of our Regular Army. This is a small enough community to allow a team of research workers, in liaison with the public health authorities, to undertake a complete epidemiological survey of the population. It should be possible to collect and record the medical history of every individual from birth to death, and to map out in space and time every case of disease. The whole population could be tested at suitable intervals with tuberculin, hydatid antigen, Schick toxin, and any other reagents. It could also be blood grouped. The distribution, movements, and changes in the bacteriological flora of man and his domestic animals could be followed in adequate samples of the population. By such means it should be possible, at a relatively small cost, to obtain for the first time a more complete ecological picture of the host-parasite relationships in a natural self-contained human community than would be practicable in any larger or less isolated natural group of human beings. We would therefore reiterate what we said in 1929: at the present moment there is in Iceland an opportunity, which will never occur again under modern world conditions, of obtaining epidemiological data of unique value.

THE next session of the General Medical Council will open on Tuesday, Nov. 26th, at 2 p.m., when Sir Norman Walker, the president, will take the chair and deliver an address. The Council will sit thereafter from day to day until their business is concluded.

THE tenth congress of the International Society of Surgery will be held, as arranged, in Egypt from Dec. 31st to Jan. 4th. The secretary-general is Dr. L. Mayer, 72 rue de la Loi, Brussels.

ON Wednesday, Nov. 20th, at 8.30 p.m., Fellows of the Royal Society of Medicine and their friends will be received by Dr. Robert Hutchison, the president, and Mrs. Hutchison. At 9.15 Sir Richard Paget will give an address on "How and why we speak." Admission will be by ticket only.

ON Nov. 28th Dr. Magarinos Torres, chief of laboratory of the Oswaldo Cruz Institute in Rio de Janeiro, will deliver a Lloyd Roberts lecture before the tropical diseases section of the Royal Society of Medicine. His title will be Further Studies on the Pathology of Alastrim and their Significance in the Variola-Alastrim Problem.

² Ibid., 1929, II., 783.

³ Brit. Jour. Exper. Path., 1932, XIII., 360.

ANNOTATIONS

THE JEWISH DOCTOR IN GERMANY

A MOVING article communicated to the *Times* on Nov. 8th by a well-informed correspondent describes the increasing intensity in Germany of Jewish persecution, and shows how the encouragement given to this mass cruelty is affording chances to the anonymous informer and the blackmailer. Jewish doctors may not be more specially victimised than the Jews of any other occupation or vocation, but the doctor is particularly open to such assaults, and among the cases selected for notice by the *Times* correspondent as examples of extra-legal Jewish persecution there are certain which illustrate how vulnerable the Jewish doctor must be to the malice of fanatics, and what an easy way to pecuniary profit for the "Aryan" practitioner an agitation can be against a successful Jewish colleague. It would appear to be the intention of Nazi organisation that the Jewish doctor should be forced out of the practice of his profession in Germany. In the majority of cases the money that he may be able to take out of the country must be small, as the result of forced sales; and out of Germany he will find the opportunities for medical practice few and precarious. Hence to many German doctors the difficulty of emigration will be such that there will appear to be no alternative to slow starvation, and this among the communities where their skill and their humanity had won them regard. We cannot doubt that the great majority of our colleagues in Germany view the state of affairs with the same feelings as we experience in England. They know as well as we do that the common object of the art and science of medicine is the welfare of all men, without distinction of race or creed. We extend to them, as well as to the victims of direct persecution, our sympathy and the expression of a hope that even now this great evil may be stayed.

A NEW COLLAPSE OPERATION

It might be thought that the labours of so many clinicians over more than forty years had exhausted the possibilities of collapse operations. During this time the technique of artificial pneumothorax has changed from an elaborate operation carried out with cumbersome apparatus by a specialist in a special clinic to a simple procedure performed by the dispensary doctor. The invention of the thoracoscope has made it possible to arrest disease in many cases where persistent adhesions between lung and chest wall prevent collapse of the tuberculous focus. The introduction of paravertebral thoracoplasty has converted a hazardous operation, carried out as a last resort in desperate cases, into a procedure with a low immediate mortality which has restored many victims of chronic phthisis to a state of economic as well as physical security. Of recent years disease limited to both upper lobes has been cured by excision of the upper ribs on each side. And, despite its drawbacks, plombage has saved some patients from that most distressing end—fatal secondary hæmorrhage from a tuberculous ulcer in the lung. So far all types of thoracoplasty have followed the lines originally laid down by Spengler and Turban, and in all the operations care has been taken to excise the posterior ends of the ribs, until two years ago Monaldi began to operate on different principles. Ventilation of the lower lobe of the lung, as Keith has pointed out, is carried out by the diaphragm; ventilation of the upper lobe

by movements of the upper six ribs. Monaldi ensures rest of the lower lobe by interruption of the phrenic nerve, while ventilation of the upper lobe is suspended by excision of the antero-lateral segments of the upper six or seven ribs. In a recent account¹ of Monaldi's work, E. Berthet explains the principles involved and points out that not only is immobilisation of the diseased lung obtained but opportunity is given for the retraction and healing of recent cavities in the upper and middle zones of the lung. There is further the great advantage that the operation is in itself of less severity than paravertebral resection, as the ribs are more readily exposed, and when bone regeneration is complete the patient is again in possession of a functioning chest wall. The operation resembles the induction of an artificial pneumothorax in so far as it is not an irrevocable step. Despite the interest which this proposal will naturally excite, emphasis must be laid on its limited indications. The lesion must be in the middle or upper zone of the lung, artificial pneumothorax must be impracticable, and the disease must be of comparatively recent standing. Chronic cavities with thick fibrous walls cannot be influenced except by one of the standard operations. It is clear that the selection of cases suitable for the Monaldi operation must be left, at least for the present, in the hands of those with special experience.

ACTIVE IMMUNISATION AGAINST
POLIOMYELITIS

A FEW months ago we drew attention² to certain efforts to devise methods of specific prophylaxis against poliomyelitis. Mention was made of the vaccines of Brodie and of Kolmer and of the results obtained with the latter preparation in immunising 25 children. It will be recalled that Brodie's vaccine consisted of virus which had been rendered inactive by formalin, whereas Kolmer's contained active virus attenuated to some extent by treatment with sodium ricinoleate. At the time our leading article was written details of Brodie's work were not available, but the publication of a paper read by M. Brodie and W. H. Park³ at the eighty-sixth annual session of the American Medical Association has made good this deficiency. In this communication the authors refer first of all to the preliminary experiments on monkeys which led them to choose a formalised vaccine in preference to others. The use of sub-infective doses of live virus or of serum-virus mixtures was abandoned, because the former method carried with it the risk of infection, and the serum-virus mixtures, to be effective, had to be so nicely balanced as to make preparation on a large scale impracticable. Inactivation with formalin was found to give a safe and effective preparation, and they finally decided on virus treated with 0.1 per cent. formalin for 8–12 hours at 37°C. As evidence of the safety of their vaccine they refer not only to their experiments on monkeys, but to the immunisation of over 2300 children without mishap. In a certain number of children the development of neutralising antibody in response to the vaccine was determined. For obvious reasons these investigations were on a limited scale, but they served to indicate that one inoculation of 5 c.cm. of vaccine produced appreciable antibody in three-quarters of the children, whilst

¹ Presse méd., Oct. 5th, 1935, p. 1558.

² THE LANCET, 1935, i, 686.

³ Jour. Amer. Med. Assoc., Oct. 5th, 1935, p. 1089.

two doses evoked antibody in almost all of them. And the titre of antibody in vaccinated children compared favourably with that of children convalescent from poliomyelitis. There seems little doubt that Brodie's vaccine can be administered to children without risk and that vaccinated children develop specific antibody. One may question, though, whether these children have acquired a reasonable and durable degree of resistance to infection. Experience with other viruses has shown that formalised vaccines give only a low-grade immunity which does not last for long, and there is no reason why poliomyelitis virus should prove an exception. This is evidently the opinion of T. M. Rivers,³ for at a recent meeting of the American Public Health Association, reported in our last issue, he questioned the efficacy of Brodie's vaccine, which has now, it appears, been given to 8000 persons. He further stated that Kolmer's vaccine was unsafe since it contained active virus. Kolmer has vaccinated more than 400 children by his method in Philadelphia during the past year with, as he says, absolutely no ill-effect, and the distribution of vaccine is being proceeded with. Nevertheless the use of a vaccine containing virus so slightly attenuated does not seem to us devoid of risk and we would suggest that a safer procedure would probably be a combination of the two methods on the lines of Laidlaw's prophylactic inoculation against distemper. A primary inoculation of formalised virus would give sufficient immunity to allow of the administration of the living attenuated virus with a greater degree of security. However, both Brodie's and Kolmer's vaccines are evidently being given to children on a large scale, and no doubt these field experiments will tell us whether either of these methods is both effective and safe.

CRUCIATE LIGAMENTS OF THE KNEE

A FEW weeks ago we commented on a paper⁴ in which Milch advanced the view that the cruciate ligaments, despite their stout build and firm attachment, have little functional value. As we suggested at the time, opinions differ about the relative importance of the capsular (especially the collateral) ligaments and of the cruciate. Leemans,⁵ of La Hestre, Belgium, from experiments on the cadaver concludes that the anterior cruciate ligament does in fact come into play sooner than the capsular ligaments in limiting anterior gliding movements of the tibia on the femur. He found that in a knee-joint with the cruciate ligaments intact and the capsule removed, anterior gliding of the tibia was arrested after a movement of 6 mm.; whereas in the reverse experiment, with the cruciate ligaments removed and the capsular remaining, 10 mm. of forward movement was permitted. The difference in posterior movements was insignificant, amounting to 2 mm. only. Leemans agrees with Milch that in extension the stability of the joint depends on the action of the collateral ligaments and the posterior oblique popliteal ligament, aided by the tonic contraction of the quadriceps femoris. It is in flexion alone that the cruciate ligaments become tense; and it is in this position therefore that they must be ruptured. In the ordinary use of the limb the cruciate ligaments appear to serve no useful purpose; can it be that their presence is a relic of the stage of incomplete assumption of the erect posture? Walking with the

knee partly bent seems to call for a type of mechanical stability different from walking with the knee extended, and with the quadriceps acting at its full advantage. Hence, possibly, the vulnerability of the cruciate ligaments in ski-ing.

HEALTH INSURANCE THROUGH AMERICAN EYES

THE *New England Journal of Medicine* of Oct. 10th, 1935, contains an unsigned article, published apparently on behalf of the Public Relations Committee of the Massachusetts Medical Society, which illustrates the misconceptions of the English health insurance system that are prevalent among American doctors at the present time. The writer regards health insurance as a product of modern industrialism, which has failed "to provide sufficient wealth for every willing worker to care comfortably for himself and his family in their essential needs," and he seems to be unaware that, through the friendly societies and the mediæval guilds, health insurance has a long history as an expression of man's need for mutual aid, and that compulsory health insurance was advocated by Daniel Defoe as far back as the seventeenth century. In his account of how the English system began the writer makes an original contribution to history. It began, he says, owing to Mr. Lloyd George's fear in 1911 that he might lose "his control of the British Government" and be squeezed out of politics:—

"Then one night he sat up late reading German history, as a relaxation from the arduous labours of the day. He learned of a German statesman who several years before finding himself in much the same position hit upon the expedient of compulsory sickness insurance as a means of demonstrating his interest in and sympathy for the labouring man. He closed the book and went to bed. The German history had solved his problem and thus was born England's compulsory sickness insurance idea."

With such beginnings it is not surprising to learn that compulsory health insurance has everywhere been controlled by "an institution that appears to be the same the world over, the institution of politics." The writer doubts that the English approved societies are really non-profit making organisations; he assumes, without giving evidence for the assumption, that—

"actually costs are so manipulated that a very tidy profit is realised. Those of us who have had any contractual contacts are familiar with costs plus plans. We know how these costs may be and are juggled, and we furthermore know that from these same costs come plenty of gravy."

In describing the English system the writer falls into other curious errors. For example, a doctor wishing to undertake insurance practice must inform the Ministry of Health accordingly; maternity benefit is a payment of £1, which is paid to the husband; the expenses of a panel practice amount to £220, and so, since the average gross income from panel practice is £392, the net income is only £172. Insurance doctoring is therefore "cheap service, and at best second-class service. This is true not only in England and Germany, but in all countries harbouring systems of compulsory sickness insurance and nobody seriously questions this fact." If the writer had read the article contributed to the same journal on April 12th, 1934, by Sir Henry Brackenbury he would have seen the allegation of inferior service very seriously questioned, and indeed confuted, by one having unequalled authority to speak on the subject. The writer concludes that the introduction of compulsory health

³ Annotation, *ibid.*, Oct. 19th, p. 1275.

⁴ Arch. of Surg., 1935, xxx., 805; see THE LANCET, August 17th, 1935, p. 384.

⁵ Presse méd., Sept. 11th, 1935, p. 1409.

insurance into the United States should be resisted by American doctors. With our experience we feel there may be worthier antagonists.

QUININE AS A CONTRACEPTIVE

DURING the past half-century quinine has probably been more widely used than any other drug for contraceptive purposes; yet it has grave disadvantages in comparison with some other substances. In the first place even the soluble quinine salts are relatively poor spermicides (J. R. Baker¹ has found several substances which are as much as 256 times as spermicidal as quinine bisulphate) and their efficiency is apparently further reduced by the vehicles in which they are usually incorporated as suppositories. Of greater significance however than this are the local and remote effects which quinine salts may have on a small proportion of the individuals using them as contraceptives. Some of these are noted by C. Booyen in a recent issue of *Marriage Hygiene*.² The local effects observed range in severity from a complaint of local irritation to an acute vaginitis with ulceration. These clinical findings are supported by the experimental work of H. M. Carleton and H. Florey³ who found that an intense vaginitis was produced in bitches by the daily introduction of quinine and urea hydrochloride into the vagina. That many substances may be absorbed from the vagina is now well established and has been proved experimentally by D. I. Macht⁴ and G. D. Robinson⁵ among others; and there seems to be no lack of clinical evidence that quinine in various forms placed in the vagina may cause severe toxic symptoms in women sensitive to the drug. Booyen quotes an interesting case reported by W. K. Ford⁶ of a male patient who developed vesicular dermatitis of the scalp, face, and neck after the application of a hair tonic. Skin tests of the ingredients of the lotion proved that quinine sulphate was the cause. A few months later, following the use by his wife of a vaginal suppository containing quinine bisulphate, he developed an oedematous vesicular dermatitis involving the penis, scrotum, eyes, cheeks, ears, and neck. These idiosyncrasies may be rare, but now that substances are available, which are not only more spermicidal but also free from any harmful local and remote effects on the users, it would seem that the time had come to abandon the use of quinine for contraceptive purposes.

THE AFTERMATH OF INJURIES

THERE is now a growing feeling that the present arrangements for dealing with injuries are wasteful and inefficient, and that much of the resulting disability is avoidable. The subject has been ventilated freely in this country during the past year. In January Dr. H. H. Kessler, of Newark, gave addresses in London on the New Jersey Rehabilitation Commission, founded in 1919 to provide medical examination, treatment, training, and placement in industry of disabled persons, including a large proportion of workmen, and a few weeks later a film was shown under the auspices of the Fellowship of Medicine, in which the work of this commission was illustrated. Two books bearing closely on the subject have since appeared; one by Dr. Kessler himself gives a detailed survey of the arrangements now in force in all the principal

countries of the world for dealing with different classes of physically handicapped persons, and the other by Mr. H. E. Griffiths contains an analysis of 50,000 consecutive cases of injury giving rise to claims under the Workmen's Compensation Acts, with some constructive suggestions. The report on the treatment of fractures, published by a special committee of the British Medical Association, has focused public attention on the deplorable results so often observed in this class of injury. This was manifest at the conference, reported on another page, where the problem of physical disability was discussed from many angles by representatives of hospitals, public health authorities, insurance companies, trade unions, and others.

It is clear that the solution of the complex questions involved cannot be attained except by the close coöperation of many different sections of the community, some of which show mutual misunderstanding and even hostility. It is common, for instance, to hear that the interests of trade unions are in conflict with those of insurance companies; that serious differences of opinion are expressed by doctors whose evidence is sought on behalf of injured persons and on behalf of employers by insurance companies; and that lawyers, doctors, and others concerned in the settlement of claims for injury tend to become absorbed in their own particular aspect of the subject and to neglect the interests of the patient. Many criticise the working of the laws, and especially of the Workmen's Compensation Acts, which are said to have become so elaborate that justice is often completely lost sight of in a jungle of technicalities. Much of the criticism is of course ill-founded. A satisfactory feature is that labour organisations are apparently out not merely to obtain adequate compensation for injuries to their members, but to establish a procedure founded on equitable principles. The Labour Party has introduced a Bill to establish a system of dealing with workmen's compensation claims on the lines practised in the State of Ontario for the past 20 years, and since adopted in principle in many of the United States of America and elsewhere. Under this scheme costs have been reduced to about 2 per cent. of the funds available (as compared with nearly 40 per cent. in this country) and the proceedings—which are conducted without the aid of lawyers and outside the courts—offer much greater advantages to the workman than are possible under our present arrangements. In spite of allegations to the contrary made during the discussion last week (see p. 1117), insurance of risks under the Workmen's Compensation and Employers' Liability Acts does not seem to be very profitable in this country. Figures published in the *Post Magazine and Insurance Monitor* for Dec. 8th, 1934, showed that about a third of the companies undertaking this business showed either no profit at all or an actual loss, and that the average profit, after allowing for expenses, was only 4½ per cent.; it was highest in the tariff companies (5.9 per cent.) and lowest in the mutual companies (0.6 per cent.).

In opening the conference on the welfare of cripples and invalid children Sir Kingsley Wood, Minister of Health, announced that the whole matter of the present arrangements for dealing with accidents and claims for injury is about to be considered by an interdepartmental committee of the Ministry of Health and the Home Office, with the following terms of reference:

To inquire into the arrangements at present in operation with a view to the restoration of the working capacity

¹ *Journal of Hygiene*, 1932, xxxii., 181.

² *Marriage Hygiene*, 1935, II., 54.

³ *Jour. Obst. and Gyn. Brit. Emp.*, 1931, xxxviii., 555.

⁴ *Jour. of Pharm. and Exp. Therapeutics*, 1928, xxxiv., 137.

⁵ *Ibid.*, 1927, xxxii., 81.

⁶ *Jour. Amer. Med. Assoc.*, 1934, ciii., 483.

of persons injured by accidents, and to report as to what improvements or developments are desirable, and what steps are expedient to give effect thereto, regard being had to the recommendations made in the report issued by the British Medical Association in February, 1935, on "Fractures."

The appointment of this committee—which was secured largely by the efforts of Mr. Geoffrey Peto, M.P., chairman of the executive committee of the Central Council for the Care of Cripples—marks an important step forward towards the provision of adequate treatment of industrial and other accident cases. It is particularly satisfactory to note the emphasis laid in the terms of reference on the "restoration of the working capacity" of such persons. This at once suggests the kind of work which is carried out by the Rehabilitation Commissions in New Jersey and elsewhere, under which schemes injured persons are not merely paid sums of money as compensation, but are taken seriously in hand by organisations, financed by the State, which ensure that as far as possible no physical handicap shall be allowed to develop or to persist longer than can be avoided, but that skilled treatment and training in industry shall be made available for all those who are so unfortunate as to be injured by accident. The experience of these commissions, as well as that of Prof. Lorenz Böhler's clinic in Vienna, has amply demonstrated that such a scheme very soon pays for itself by saving costs of compensation and maintenance of the patients; while the saving in suffering, both physical and mental, is immense. No one grudges the payment of charitable contributions to meet the needs of cripples, but it is scandalous that large numbers of persons should be allowed to drift into a condition of prolonged or permanent physical incapacity through lack of efficient and properly coördinated arrangements for treatment. Many of our own surgeons are alive to this; see, for instance, the Liverpool discussion (p. 1119). The new committee will pay great attention to suggestions put forward by those with experience of the care of the crippled and disabled.

THE HODGKIN GIANT CELL

"HODGKIN'S DISEASE" must be one of the most firmly established of eponyms and surely one of the most justifiable. In his paper entitled "On some morbid appearances of the absorbent glands and spleen"¹ Thomas Hodgkin gave the first clearly defined account of this condition, and in the main his description of the morbid anatomy of the disease which now bears his name stands good to-day. The exact histology was worked out at a later date, and here the apportionment of credit becomes more difficult. In descriptions of the well-known giant cells of the Hodgkin lesion, one of the most characteristic features of the microscopic picture, two names are often encountered: in European literature that of Carl Sternberg, who has just died in Vienna at the age of sixty-three; in America that of Dorothy Reed. Both these authors made substantial contributions to the histology of Hodgkin's disease, and accurately described the giant cells in question.² Although it would be wrong to suppose that these descriptions were novel at the time of their publication, yet they were much more accurate and detailed than any which had been given up to that time. In this country we like to give credit to

W. S. Greenfield (1846-1919) for one of the earliest correct descriptions of the histology, including the giant cells. Here are his own words.³

"Lymphatic glands.—In all five cases the change in the glands was the same in kind, though it differed in degree, in different cases and in the various glands from the same case. It consisted essentially in a sort of chronic inflammation involving especially the fibrous stroma of the gland, which became thickened and gradually obliterated entirely the interstices, so that the gland became a mass of dense, tough, fibrous tissue, with little or no trace of adenoid structure. In the early stages . . . there was some general enlargement of the glands, the fibrous stroma appeared coarser, and there were a large number of multinucleated cells adherent to the trabeculae, well seen on washing away the lymph cells. These multinucleated cells, containing from four to eight or twelve nuclei, were often collected in clusters in the parts of the gland especially where the fibrous change was progressing. . . ."

Greenfield was appointed professor of pathology in Edinburgh in 1881, and according to Boyd continued to teach there the true histology of the disease to successive generations of students. Yet even before Greenfield's description the Hodgkin giant cell was not unknown. There is a reference to it in the second edition of Wilks and Moxon's "Lectures on Pathological Anatomy" (1875)—"The very soft forms too" of Hodgkin's disease "have often large polynucleated cells, while the meshwork is delicate, so that they become very like soft carcinomas, only that the cells are not epithelioid but lymphoid." In the first edition (1859) of these lectures (by Wilks alone) Hodgkin's disease is not mentioned. Wilks "took credit to himself for having unearthed" Hodgkin's original paper,⁴ and he was mainly responsible for the introduction of the eponym. This is not in any way to belittle the importance of Sternberg's contribution to the pathology of Hodgkin's disease. Admittedly he propounded the view that it was a special type of reaction to tuberculous infection—a hypothesis not now accepted—but his description of the morbid anatomy and histology of the disease was precise and accurate and a big advance in our knowledge of an obscure subject.

Dr. J. A. RYLE will deliver his inaugural address as professor of physic in the University of Cambridge on Tuesday, Nov. 26th, at 5 P.M. He will speak on the aims and methods of medical science.

¹ Trans. Path. Soc., 1878, xxix., 272.

² Trans. Path. Soc., 1878, xxix., 269; Guy's Hosp. Reps., 1865, xxvi., 56.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Afternoon courses will be held in venereal diseases at the London Lock Hospital (Nov. 18th to Dec. 14th); in infants' diseases at the Infants Hospital (Nov. 25th to Dec. 7th); in dermatology at the Hospital for Diseases of the Skin, Blackfriars (Nov. 25th to Dec. 7th). An all-day course in proctology will be given from Nov. 25th to 30th at St. Mark's Hospital. A course will be given at the Brompton Hospital on Nov. 30th and Dec. 1st, and a special all-day course in thoracic surgery will also be given there from Dec. 2nd to 6th. For M.R.C.P. candidates there will be an evening clinical and pathological course at the National Temperance Hospital, on Tuesdays and Thursdays at 8 P.M., from Nov. 26th to Dec. 12th, and from Dec. 9th to Jan. 10th (excluding Christmas week) courses in chest diseases will be held at the Brompton Hospital and at the Victoria Park Hospital. Full information may be had from the secretary of the Fellowship, 1, Wimpole-street, London, W.1.

³ Med.-Chir. Trans., 1832, xvii., 68.

⁴ Sternberg, C.: Zeits. f. Heilk., 1898, xix., 21; Reed, D.: Rep. Johns Hopkins Hosp., 1902, x., 133.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXVII.—PROGNOSIS OF CÆSAREAN SECTION

CÆSAREAN section, as a major surgical operation, is relatively safe; as a method of effecting childbirth, it is relatively dangerous. It is well to emphasise this; for although Cæsaean section is not, let us hope, used as an alternative method of delivery in normal cases, the indications for which it is nowadays sometimes performed appear to be extremely flimsy. The remarkable increase in the number of Cæsaean sections during the last twenty years has been due to a gradual relaxation of the indications for the operation. Formerly, contracted pelvis and obstructed labour were its only indications, but now it is done for almost every imaginable complication of pregnancy and labour. Most of the newer indications can be classed as "fœtal"; and there can be no doubt that an exaggerated idea of the value of the infant's life as compared with the life and health of the mother (due to the fact that nowadays pregnancies are spaced, regulated, and relatively rare) is having a subtle influence on modern obstetrical procedure. Cæsaean section performed for pelvic contraction in otherwise healthy young women without complications and not in labour shows a mortality of from 1 to 2 per cent.; whereas natural delivery in young women, comparable in all respects except absence of pelvic contraction, shows a mortality of from 1 to 2 per 1000. This seems to be a fair comparison and shows that Cæsaean section as a method of childbirth is only one-tenth as safe as normal labour.

It is convenient to consider the prognosis from two points of view: (1) the *immediate* prognosis: what is likely to be the mortality of the operation in the various conditions in which it is performed; (2) the *remote* prognosis: what is the risk of rupture of the scar in subsequent pregnancies and labours. Moreover, the prognosis must also be considered in relation to the type of operation performed. The *classical* operation, being easy and quick, is still being done much oftener than the *lower segment* operation which, although requiring more surgical skill and usually taking longer, is in most cases safer.

Classical Cæsaean Section

Munro Kerr and Eardley Holland in 1921 undertook an investigation into the results of classical Cæsaean sections performed in hospitals in Great Britain and Ireland during the years 1911–20 inclusive, and published the full analysis of 4197 operations.

THE MORTALITY

First and foremost must be made the essential distinction between the mortality of the operation as performed on healthy women before the onset of labour, and the mortality of the operation when performed in the presence of possible intrapartum sepsis or for complications such as eclampsia, antepartum hæmorrhage, and so on. The true mortality of the operation *per se* is obtained by taking cases in which it was performed for contracted pelvis in healthy patients who were not in labour—where, therefore, there was no risk of intrapartum sepsis due to vaginal examinations, rupture of the membranes, or prolonged labour. In such favourable circumstances the operation is a particularly safe

one in the hands of a skilful operator and in suitable surgical surroundings. But very remarkable is the progressive rise in mortality as the risk of intrapartum sepsis, or the unfavourable state of the patient, increases. In Kerr and Holland's analysis it was shown that the *maternal mortality* for cases not in labour or very early in labour was 1.6 per cent.; for cases after attempted surgical induction of labour, 14 per cent.; and after "failed forceps" the mortality reached the high figure of 26 per cent. The high mortality after cases long in labour, and especially after attempts at delivery, is an indication of the risks likely to be incurred when the operation is performed under such circumstances; but an immense factor for good or evil is, of course, the way the patient has been handled before the operation, and whether examinations and manipulations have been made with strict aseptic precautions or otherwise. The maternal mortality of Cæsaean section is almost entirely due to septic infection, leading as a rule to general peritonitis; pneumonia (probably of septic origin), pulmonary embolism, postpartum hæmorrhage, and postoperative intestinal obstruction account for a few deaths.

The *fœtal mortality* in cases in which forceps had been tried and failed amounted to 27 per cent. in the above series, and the early mortality of the infants who survived delivery was 11 per cent. The fœtal or infant mortality in such cases is from subdural cerebral hæmorrhage due to forceps-pressure. It is important to bear in mind that cerebral hæmorrhage does not affect the action of the fœtal heart, but paralyzes respiration; so that although intra-uterine existence is not interfered with (the fœtal heart will therefore be heard before delivery) the fœtus cannot breathe after birth.

PLACENTA PRÆVIA

In the treatment of placenta prævia Cæsaean section is becoming increasingly prominent. In the past it has been confined to cases of the "complete" variety, in which the bleeding is considerable and it is seldom possible to effect delivery by the natural passages, without further severe loss of blood. The operation is especially indicated in cases of complete placenta prævia in which labour has not begun and the cervix is closed and resistant. In such cases Cæsaean section performed after the first attack of bleeding is certainly less dangerous than delivery by the natural passages—besides offering almost the only chance of survival for the fœtus. But given skilled operating and the proper environment Cæsaean section need not be limited to this class of case. Provided the patient is in good condition, the mortality of Cæsaean section for placenta prævia should be no higher than for contracted pelvis—viz., 1 or 2 per cent.; the mortality of placenta prævia treated conservatively, even in skilled hands, is certainly higher than this. The tendency of modern practice is, quite rightly in my view, towards the increased employment of Cæsaean section in the treatment of placenta prævia. The position is well stated by A. H. Bill, who has recently published a series of 104 cases, 80 per cent. of which were treated by Cæsaean section, with a maternal mortality of rather less than 2 per cent. Cæsaean section is not contra-indicated by the death of the fœtus, for the operation is mainly undertaken

in the maternal interest. In order to reduce operative shock the operation should be performed under spinal or gas-and-oxygen anaesthesia, and intravenous saline or blood transfusion may be indicated during the operation.

ECLAMPSIA

When Cæsarean section is performed for other than local complications (such as pelvic contraction and other causes of obstruction, and placenta prævia) the issue becomes confused; for the prognosis of the complication when treated by Cæsarean section, rather than the prognosis of the operation itself, becomes dominant. An outstanding example is eclampsia. The recent collective investigation of eclampsia in Great Britain demonstrated, according to the analysis made by T. Watts Eden, that patients with eclampsia delivered by Cæsarean section had a mortality much greater than the average for the disease, *both in mild and in severe cases*; and it is now generally held that Cæsarean section diminishes the chances of recovery instead of increasing them.

THE RISK OF SUBSEQUENT RUPTURE OF THE SCAR

A collective follow-up investigation undertaken a few years ago into over 1000 cases of Cæsarean section performed by British obstetric surgeons between the years 1911 and 1918 inclusive has made us aware that the risk of rupture of the uterine scar is a more serious menace than was once believed. It is now known that rupture of the scar is liable to occur in about 4 per cent. of patients who become pregnant subsequently and proceed to term or near it. In the recorded cases rupture has occurred almost as often during pregnancy as during labour, and occasionally as early as the seventh month. The prime cause of rupture is imperfect healing of the uterine incision resulting in a thin scar in which muscle union has failed. Imperfect healing is due either to infection or to hurried and inefficient suturing of the uterine incision. An important point to consider in prognosis is whether a given patient may be peculiarly liable to this accident. This cannot be prophesied with certainty, and all we can say is that if there was a smooth and afebrile convalescence from an operation performed by an expert, the scar is not likely to be thin; but if the convalescence was pyrexial with signs of uterine or abdominal infection, and if the operation was performed hurriedly (and the high proportion of ruptured scars which have followed operations done hurriedly in women desperately ill from eclampsia or antepartum hæmorrhage, for example, is remarkable) the chances of rupture are higher.

When therefore the problem of how to manage a future pregnancy has to be faced, these points are to be considered. Is the saying "Once a Cæsarean always a Cæsarean" always true? By no means. If the circumstances of the last operation point to the probability of a weak scar, the patient should be advised to have another; but if the circumstances were favourable, and there is no reason to anticipate any difficulty in labour, she may be allowed to deliver herself naturally, but should be able to get prompt surgical assistance should the necessity arise.

FUTURE REPRODUCTIVE FUNCTION

A subsidiary point which emerged from the foregoing inquiry was the high percentage of infertility which followed the operation. Less than half the patients became pregnant again. This, of course, only confirmed common experience; the infertility is chiefly voluntary, because many women dread or

dislike the idea of a repeated operation. The point is an important one and deserves consideration before Cæsarean section is undertaken for a foetal indication (e.g., foetal distress, faulty presentation). If the long view is taken, the life of a single child is of small value compared with preserving the fertility of a young mother and her ability to bear children in a natural way (and as many as she wants).

Lower Segment Cæsarean Section

In this operation the uterine incision, vertical or transversely curved, is made in the lower segment after incising the uterovesical fold of peritoneum and pushing down the bladder. The operation is safer than the classical operation; for the immediate mortality is lower, and the risk of rupture of the uterine incision in subsequent pregnancy and labour and of postoperative intestinal obstruction is less. These advantages ensue because (1) the uterine wound is covered in by a thick layer of uterovesical fascia and by the bladder, and a perfect closure of the uterovesical peritoneum can be made, thus lessening in infected cases the likelihood of spread of infection from the uterus to the peritoneal cavity; (2) the wound lies in an inactive part of the uterus, and is at rest during the process of healing, giving a better chance of a strong and perfect scar; (3) the position of the wound is such that adhesions to intestine cannot easily occur.

The lower segment operation is therefore specially suitable for use in infected or potentially infected cases, and has greatly improved the prognosis in this class of case. The operation has gained favour very slowly in this country, and no large body of statistics yet exists. An analysis of 874 operations performed at the Chicago Lying-in-Hospital has been published by J. P. Greenhill, with a mortality of only 1.26 per cent.; in 50 per cent. of the cases the patients were in labour at the time of the operation, and in 20 per cent. the membranes had been ruptured for some hours. In the operations in which the indication was cephalo-pelvic disproportion (almost one-half the total) the mortality stood at the low figure of 0.8 per cent. A comparison of these figures (which are fully confirmed by other operators) with the figures already given for the classical operation leaves little doubt which is the better operation. Moreover, the lower segment operation carries a much greater protection against rupture of the scar, not more than 25 cases of rupture having been so far reported in the entire world-literature.

EARDLEY HOLLAND, M.D., F.R.C.S.,
Obstetrical and Gynaecological Surgeon,
London Hospital.

LONDON HOSPITAL.—Sir William Goschen is appealing for £80,000 for the London Hospital. New wards are required for ear, nose, and throat cases, improvements and extensions are necessary to the clinical laboratories, and the X ray department needs new equipment. The nurses' home is inadequate and must be extended, and the domestic staff require a hostel. The money is asked for immediately so that the considered plans may be put into execution.

NORTHERN WOMEN'S HOSPITAL, NEWCASTLE-UPON-TYNE.—The Duchess of Northumberland recently officially opened the new premises of this hospital in Osborne-avenue. The hospital, which has been in existence for 18 years, provides accommodation for women of small means who wish to contribute towards the cost of treatment but cannot afford the more expensive nursing-homes. During the past three years 90 per cent. of all the expenses have been covered by the patients' fees.

SPECIAL ARTICLES

BRITISH MEDICAL ASSOCIATION

MEETING IN MELBOURNE

SECTION OF OBSTETRICS AND GYNÆCOLOGY

Dr. J. S. FAIRBAIRN (London), the president, opening a discussion at this section on the Prevention and Prognosis of the

Late Toxæmias of Pregnancy

defined the condition as a clinical syndrome of which raised blood pressure and albuminuria are the most prominent and constant signs, although other manifestations such as headache, vomiting, œdema, jaundice, and antepartum hæmorrhage are frequently associated. Careful clinical observation was essential before arriving at the diagnosis of toxæmia. Albuminuria, for instance, even of proved renal origin, might mean much or little. By excluding those cases whose toxic manifestations appeared before the twenty-eighth week of pregnancy, the difficulty of differentiating them from cases of chronic nephritis complicating pregnancy was to a large degree overcome. Because of our ignorance of the exciting cause, the physiological control of the condition must be empirical. Dr. Fairbairn enumerated various systems designed to prevent the condition; he himself favoured a diet rich in calcium and vitamins A and D, with additional carbohydrate in the last few weeks of pregnancy. Notwithstanding all care, however, toxæmic states would still occur; but by means of careful antenatal observation and prompt treatment many cases could be controlled in the earlier stages. The cardinal points of treatment were elimination, dietary control, and prevention of acidosis. Should the toxæmia not yield to these measures, or become intensified, the termination of pregnancy must be seriously considered.

There had been no definite fall in the maternal death-rate from eclampsia in recent years in spite of energetic treatment of patients in the "pre-eclamptic" state; eclampsia would not be entirely prevented until some means of preventing toxæmic states was available. Impending convulsions might be anticipated in cases showing a steady rise in the blood pressure, lessened secretion of urine, and severe headache, visual disturbance, or epigastric pain. Eclampsia was an acute condition of sudden onset; cases of gradual onset exhibited symptoms predominantly renal and rarely convulsions. In developed eclampsia, the prognosis depended upon the number of fits and their sequelæ. Jaundice was an unfavourable symptom. Early return of consciousness after the cessation of the fits, fall in pulse-rate, and increased secretion of urine were favourable omens. The prognosis for cases of toxic albuminuria under treatment was determined more by the daily amount of urine passed than by the actual amount of protein in the urine. Pregnancy might be allowed to continue whilst improvement was maintained. The remote prognosis for toxæmic cases depended upon the completeness of recovery. As the severity of the attack was of little moment compared with its duration, the importance of terminating the pregnancy before permanent damage resulted was apparent. The greatest care must be exercised during subsequent pregnancies, and failure of a second trial of pregnancy prohibited any further risk. Persistent high blood pressure was an unfavourable sign. A considerable foetal mortality attended all toxæmic states, being

more marked in the convulsive cases than in the non-convulsive.

Dr. JOHN S. GREEN (Melbourne) agreed that rest, elimination, and dental attention with dietary restrictions might lessen the incidence of toxæmia. In spite of all preventive treatment serious complications might ensue. The medical disability of such cases as temporarily recovered from their toxæmia was difficult to assess. There was always a tendency to improvement as time went on. The persistence of a high blood pressure and unsatisfactory urea-concentration tests suggested a latent phase which might relapse in subsequent pregnancies. In the immediate pregnancy the vast majority of cases responded promptly to treatment, but there was always a residue demanding serious consideration and often requiring interference with the course of pregnancy. Subsequent recurrence was to be expected in about one-third of all cases. The response to treatment was often at variance with the acuteness and severity of the toxæmia. Dr. Green mentioned various associated factors which might be used as a basis for the management of these toxic cases—i.e., early onset (before 35 weeks); significant past history; age and parity; bad renal function tests. If albumin persisted for longer than five days the presence of two of these factors suggested an unfavourable outcome and the presence of a third and certainly of a fourth justified immediate interference. The persistence of albuminuria with an associated high blood pressure had been suggested as a fifth factor. Consideration of these factors would be found valuable in attempts at individual prognosis regarding future pregnancy and health.

Dr. F. BROWN CRAIG (Sydney) believed that the ultimate toxic cause of the toxæmias was one elaborated in the mother's intestine—perhaps *B. coli*. Satisfactory elimination was undoubtedly a great preventive measure. Albuminuria diminished when constipation was overcome, and a well-balanced diet was always valuable. If elimination and dieting did not control albuminuria, timely induction of labour was indicated. In the primipara care and diet is more important than in the subsequent pregnancies; increased quantity of food in terms of calories was not required. With regard to maternal prognosis the death-rate of eclampsia in the Royal Hospital for Women, Sydney, was 6.9 per cent. In cases of toxic albuminuria treated by termination of pregnancy the group mortality was 15.7 per cent., which was much greater than the average. Considerably more of these cases were admitted in the winter months. Toxic albuminuria should be treated in hospital and pregnancy terminated if albuminuria did not clear up in two or three weeks. Toxæmia recurring in later pregnancies should be treated by termination and subsequent sterilisation. The main cause of death in the children of albuminuric patients was prematurity, whilst the children of eclamptic mothers were always bad risks.

Dr. KENNETH WILSON (Brisbane) held that many dietary claims had not justified themselves. Adequate antenatal supervision would largely eliminate eclampsia. He advised the early exhibition of assimilable calcium and alkalis, though admittedly some patients became toxæmic whilst taking calcium. No pregnancy should occur for at least 12 months after the disappearance of the albumin and the return of the blood pressure to normal.

Dr. MARY DEGARIS (Geelong, Vict.) said that early iliac pain was apt to pass on to pyelitic conditions,

and in some cases to albuminuria. In her view it was a mistake to starve patients suffering from toxæmia.

Prof. J. B. DAWSON (Dunedin, N.Z.) pointed out the difficulty of distinguishing the primary toxin which initiated the condition from the secondary ones which affected the parenchyma. In many pregnancies there was a very definite metabolic upset. Toxæmias occurred at the times of chorionic activity or degeneration, and he believed the chorionic elements to be the originating cause. It was quite likely that an endocrine convulsion was the starting point of these toxæmias. Some of the gravest toxæmias were associated with the development of a hydatidiform mole and it was thus possible that the anterior lobe of the pituitary gland might have a preponderating action in the development of a late toxæmia of pregnancy.

Dr. HUBERT JACOBS (Melbourne) believed that an undue increase in weight had some significance as a premonitory toxæmic manifestation.

Dr. H. A. RIDLER (Sydney) said that prognosis in these cases depended largely on good nursing.

Dr. REX MATTERS (Adelaide) urged the need of further investigation of the possible endocrine factors underlying these cases. The water metabolism factor of the posterior pituitary lobe might be very active in the toxæmias and it was this which might be decreased by the morphine therapy elaborated by Stroganoff.

The PRESIDENT spoke of the need for the establishment of a clinical research school to devise constructive methods of prevention. A consideration of the effects of treatment on already developed cases must be a very valuable guide.

Sir EWEN MACLEAN (Cardiff) opened a discussion on the Remote Results of

Puerperal Sepsis

He spoke of the difficulty of procuring accurate information on the prevalence of maternal morbidity. Little coöperative investigation was being conducted in this field. Much could be done by enlisting the good offices of the Health Organisation of the League of Nations and the larger approved insurance societies. "Remote" results of puerperal sepsis were those discovered some time after the puerperium. It would be agreed that all infected cases were associated with some degree of trauma, which served as the gateway for unresisted infection. The morbidity arising from sepsis at the time of confinement was extremely difficult to assess in actual figures because of the scantiness of the records, but had been conservatively estimated at 40,000 per annum in the British Isles. Sir Ewen referred to a table drawn up by Dr. Donald McIntyre which showed the importance of infective lesions resulting from childbearing on the reproductive tract. The conditions considered included chronic cervicitis, chronic endometritis and subinvolution, chronic salpingo-oöphoritis and pelvic cellulitis.

Chronic endocervicitis was essentially associated with traumatic lesions, great or small. Persistent infective cervical lesions led to disorder and degeneration of tissue, predisposing to malignant changes at a later date. Subinvolution was a manifestation of a very mild degree of infection, possibly unnoticed during the puerperium, which definitely lowered the fertility-rate. Sir Ewen emphasised the tendency for tubo-ovarian disease to subside and commended the general tendency of the profession to adopt conservative treatment. Chronic urinary infection was a puerperal sequela not generally afforded its

true importance because of the difficulty in tracing the infective process from "history" alone. Thrombophlebitis following puerperal infection and phlegmasia might result in very prolonged disablement and call for careful physiotherapeutic measures to ensure their complete cure.

Dr. RUFERT FURBER (Sydney) said that there was no real proof of any association between fibrosis uteri and puerperal sepsis. No microscopic inflammatory changes in the myometrium could be demonstrated even in advanced cases. Fibrosis uteri was a clinical entity associated with a halting in the process of involution. Various disturbances in lactation might be associated with its development.

Dr. ARTHUR SHERWIN (Melbourne) discussed the late results of puerperal sepsis affecting the structures adjacent to the uterus. The anatomical pathway of the spread of infection was considered—tubal involvement being by direct spread whilst broad ligament infection occurred via lymphatics and occasional thrombo-phlebitides. Many cases of salpingo-oöphoritis would resolve in time. He could not agree that gonorrhœal infection was uncommon in the upper genital tract. In his opinion the tubes were not usually involved primarily in puerperal sepsis, but were commonly involved in gonococcal conditions; the gonococcus soon died out but its effects were carried on by the secondary invaders.

Dr. N. MCL. FALKNER (Dublin) spoke of a case of mild sepsis following Cæsarean section. Hysterectomy was performed 18 months later for profuse menorrhagia which revealed a small abscess in the uterine wall around a residual silk suture. Patients with sepsis following full-term confinement often recovered completely, whilst those infected during miscarriage might show late sequelæ.

Dr. EDWARD WHITE (Melbourne) said that complete resolution of puerperal sepsis might be expected as a rule. Active treatment should be limited to medical measures, particularly medical diathermy, which was extremely useful in pelvic cellulitis. He had found vaccine therapy valuable in early chronic cases. He agreed that fibrosis uteri was a condition quite apart from puerperal sepsis; no microscopic evidence of inflammation could be adduced.

Dr. B. MILNE SUTHERLAND (Melbourne) believed that late puerperal sepsis led to much chronic ill-health and invalidism. Puerperal sepsis at full time did not as a rule lead to sterility. Mild irritation of the bladder associated with chronic puerperal cervicitis was a definite lesion calling for careful treatment. A late pelvic cellulitis might scar the parametric tissues as it resolved, constricting the ureter and leading to attacks of pyelitis. Severe congestive menorrhagia might eventually follow phlegmasia alba dolens.

The PRESIDENT said that chronic ill-health led to neurasthenia even after very minor infection, and pleaded for the consideration of the human element as apart from the pathological manifestation. The discharge of chronic cervicitis was a constant worry, whilst recurrent attacks of salpingo-oöphoritis might make a chronic invalid. Abortions were more often the cause of chronic tubal disease than were full-time pregnancies. The infecting agent in septic puerperal peritonitis undoubtedly spread by anatomical routes. Radium was the method of choice in the treatment of uncomplicated fibrosis uteri to the exclusion of hysterectomy.

Sir EWEN MACLEAN, in reply, once more emphasised the necessity for prolonged conservative treatment in these cases.

SECTION OF OPHTHALMOLOGY

Mr. A. J. BALLANTYNE (Glasgow) presided over this section when a discussion on

Glaucoma

with special reference to medical aspects and early diagnosis, was opened by Mr. H. M. TRAQUAIR (Edinburgh). He said that he would deal only with clinical experience in that form of primary glaucoma known as chronic or simple glaucoma. In his view acute and subacute glaucoma differed from chronic glaucoma in violence only, not in essential nature. The cause of glaucoma was still unknown; such conditions as hypermetropia, small cornea, and shallow anterior chamber were predisposing causes only. The chief feature of the disease was that the patients were (1) elderly, and (2) of an anxious, nervous temperament. When glaucoma occurred in the young the family history usually indicated the predominance of hereditary factors. As the disease was common in all classes of society it did not seem probable that nutritive or hygienic conditions affected it. Since both eyes were invariably affected, glaucoma should be considered as a disease of the patient—not merely one of the eye. The most usual symptom complained of was recurrent dimness of vision in one eye, and though this symptom was usually described as one of the "prodromata" of glaucoma, it was clearly a sign of the established disease. Glaucoma commenced without symptoms, and its early diagnosis depended upon the correct interpretation of the patient's early symptoms. The most difficult cases to diagnose were those that commenced insidiously; such cases were often first detected during the routine examination for glasses. Where there was any doubt, the tonometer should be used. Mr. Traquair thought that the so-called "normal" tension of 20 mm. was rather high, and he was always suspicious of eyes with a tension of over 22 mm. If a significant drop in the tension occurred after the instillation of eserine a diagnosis of glaucoma was strongly supported. In a normal eye, only a very slight fall in tension occurred. The field changes in glaucoma were sometimes of value in diagnosis—though more frequently in prognosis. Field changes were the result of the glaucomatous process, and thus could not be present until a relatively late stage of the disease. The stage before they occurred Mr. Traquair designated the "pre-perimetric stage," and he pointed out that the more expert one became in detecting field changes the shorter would be this stage.

Cases of possible or suspected glaucoma could be classified in two main groups—according to whether field changes were present or not.

GROUP 1. *No obvious or gross field changes present.*—(a) Neither symptoms nor signs present: The suspected eye appeared normal in every way, but was suspected because of definite glaucoma in the other eye. (b) Symptoms alone present: A history of haloes, periods of ocular discomfort, or other suggestive symptoms were given, but the optic disc and tension appeared normal. (c) Ophthalmoscopic signs alone present: Cupping or pallor of the optic disc, alone or together, was found in routine ophthalmoscopic examination. (d) Increased intra-ocular tension: During routine examination the tension might be found to be raised. (e) Various combinations of those features mentioned under (b), (c), and (d) might be found.

GROUP 2. *Gross and easily detected field changes present.*—Here the problem was not so much the

detection of early changes but the proper interpretation of the changes. The main point in investigation was to detect the earliest possible field change. This was done by using the weakest possible stimulus. A 1 mm. white object used at 2 metres on a Bjerrum screen was, generally speaking, the smallest reliable stimulus. The isopter for 1/2000 which normally extended for about 26° all round and included the blind spot might be contracted in early glaucoma, and if contracted to within the 12° circle, the blind spot would be left entirely outside it. Another typical change was a contraction of such degree that the field skirted around the inner side of the blind spot, leaving the upper and outer parts exposed. This was described as "barring of the blind spot," and was referred to by Sinclair as "Bjerrum's symptom." It was, in Mr. Traquair's experience, the earliest field change found in suspected glaucoma, and he had never found it apart from glaucoma, although, of course, it might possibly occur. This sign was the precursor of the typical arcuate scotoma seen in glaucoma, although the latter did not appear to grow out of the former, but appeared to arise independently on or about the 15° circle, a little distance from the blind spot. It was only in its later stages that the arcuate scotoma merged with the blind spot, and therefore it was in no way an "enlargement of the blind spot." When more fully developed, the arcuate scotoma crossed the vertical meridian and formed the "nasal step."

Mr. Traquair then briefly summarised his remarks, concluding that glaucoma should be diagnosed by the clinical picture as a whole, not by any one sign. The only pathognomonic sign was increased tension, and this was not always easily elicited.

Lieut.-Colonel R. E. WRIGHT (Madras) said that there were two main types of glaucoma, the determining factors being (1) in the anterior, and (2) in the posterior chamber. The factors that operated in the posterior chamber were (1) vitreous swelling, and (2) alterations in the vascular bed. The speaker's impression was that the former type (vitreous swelling) was more common in Indians, and the latter in Europeans, possibly owing to the vascular changes that occurred as the results of anxiety. He thought that insufficient attention had been paid to a disease, epidemic dropsy, of which glaucoma was an essential part. Research into this disease might throw light on the causes of glaucoma. Epidemic dropsy was generally considered to be a form of beri-beri, though it occurred in epidemics, and did not occur all over India, while beri-beri was endemic. Medical treatment of glaucoma was a failure, because the patients were seen too late. He knew of no medical treatment apart from massage and miotics. For the early diagnosis he thought that field changes were the most reliable sign, and to elicit these he used a Bjerrum screen, not a perimeter. In taking the tension it was very important to measure both eyes, and measurements were of no use unless bilateral. Depression of the light sense was also a valuable sign in early glaucoma if vitamin-A deficiency could be excluded.

Prof. W. A. OSBORNE (Melbourne) said that the theories of glaucoma were legion, beginning with the obstruction of the canal of Schlemm, and passing through the imbibition of gels with varying hydrogen concentration to the vogues of histamine and vitamin deficiency. He had little doubt that new theories would soon be advanced, but in his opinion the first line of attack should be an investigation of the means by which the intra-ocular pressure was kept so remarkably constant. This constant pressure

must be maintained by an oscillatory type of equilibrium, and he thought that the regulation of the standard pressure of the eye was a fundamental problem in glaucoma.

Dr. LOCKHART GIBSON (Brisbane) suggested that glaucoma was often due to a mild subthyroidism, with a mild myxœdema of the eye. He always gave his patients thyroid extract, he thought with considerable improvement.

Dr. W. F. ORR (Melbourne) doubted if tension were so all-important. He thought that an eye could stand high intra-ocular pressures without serious damage. In his opinion the field was not materially reduced while the intra-ocular circulation could be kept going, and if the choroidal veins were functioning the vision would not be impaired.

Dr. E. L. GAULT (Melbourne) said that the cause of glaucoma was still in the realms of speculation. He did not usually see patients in the very early stages, and always advised operation.

Dr. W. M. BOX (Melbourne) gave a description of Troncoso's gonioscope, an instrument for investigating the angle of the anterior chamber. He showed various drawings illustrating normal and abnormal angles, and said that in some cases of glaucoma, at least, there were no peripheral synechiæ. Blocking of the canal of Schlemm by the iris could thus have no part in the production of glaucoma in these patients.

Mr. BISHOP HARMAN (London) thought that glaucoma was essentially a disease of the eye, often due to a congenital defect. Diagnosis with the ophthalmoscope could often be better done if the illumination were reduced in intensity. He thought that the screen test was best for corroborative evidence, though it often exhausted the patient.

Mr. J. H. DOGGART (London) said he had found that pulsation of the retinal veins abolished by a miotic was a suggestive sign of early glaucoma.

Dr. E. RYAN (Melbourne) asked if anyone had any suggestion for the treatment of malignant glaucoma—those cases in which the tension remained high in spite of any interference.

Dr. RINGLAND ANDERSON (Melbourne) stressed the importance of reduced illumination in perimetry, and showed a diagram of a perimeter in which he was able to reduce the illumination at will.

The PRESIDENT did not think that all cases of glaucoma were cases of the same disease. He asked what were the signs by which the disease could be diagnosed in the preperimetric stage.

Mr. TRAQUAIR, in reply, said that he did not agree with Mr. Bishop Harman that glaucoma was primarily a disease of the eye, and he could hardly visualise a congenital defect that did not operate until the patient was middle-aged. The only sign in the preperimetric stage was increased tension.

POST-GRADUATE LECTURES

AMONG the addresses delivered at post-graduate courses in the autumn session at the London teaching schools was one by Mr. Julian Taylor of University College Hospital. It appears here in abridged form.

OBSTRUCTION IN THE COMMON BILE-DUCT

(MR. JULIAN TAYLOR)

OBSTRUCTIVE jaundice is a common symptom and a constant source of contact between surgeon and practitioner. From the patient's point of view its appearance is always a very serious event, often more serious than he suspects, as it necessarily carries with it the probability of a severe operation. From the surgeon's angle the jaundice may be on the one hand his introduction to a simple case of gall-stones with an easy, highly satisfactory, and just occasionally expensive operation, or on the other hand it may be the sign indicating the presence either of incurable disease or of formidable difficulty with uncomfortable danger. Nevertheless, in the presence of jaundice he must nearly always undertake the responsibility of performing some operation, even when confronted with whatever old or enfeebled subject, and however precarious the patient's condition it is rarely possible for him to turn tail in the exercise of his discretion.

I propose to deal with the subject of common bile-duct obstruction, starting from its cardinal symptom jaundice, and it is needless to say that its commonest cause is gall-stones. I do not presume to detail their symptomatology, which I doubt not many of you know better than I; but I would like to refer to the nature of the stones that cause it.

Stones causing jaundice are commonly primarily formed in the gall-bladder, passing thence to the bile-ducts where they may grow to large size and

where their residence may result in the formation of more stones. The stones that leave the gall-bladder for the common duct are nearly always the multiple faceted ones, as for some reason that I do not understand—although I have an idea about it—the round so-called pure cholesterol stones, whether large or small, single or multiple, rarely enter the cystic duct but seem rather to stay in the gall-bladder and there to produce their symptoms. A small faceted stone may produce the severest biliary colic, but provided that it passes to the intestine the jaundice resulting is mild and evanescent. If the stone stops in the duct the jaundice of the first attack of colic may again be evanescent but the stone grows and the further attacks of colic that it precipitates are associated with an ever-deepening jaundice of longer and longer duration, so that eventually the patient may never be completely free from yellow discoloration. Nevertheless it is possible for stones to exist for ten years or more in the common bile-duct and to produce little trouble; but we must remember that biliary obstruction results in ever-increasing distension of the passages in the liver, and in severe and long-standing cases in a fibrosis of its substance. In recurring biliary colic we thus have to envisage the possibility either of the repeated passage of stones to the intestine or of the prolonged residence of one or more in the bile-duct or ducts with the consequences to the liver arising from the prolonged halt and increasing size of the stone. In prognosis the first is hardly more serious than uncomplicated stones in the gall-bladder, while the latter, always surely indicated where the jaundice is more than evanescent, carries with it the dangers both of possible cholangitis and of depression of the liver function.

In saying that jaundice is the cardinal symptom of stones that leave the gall-bladder, may I remind you that it may also be the only one, and when jaundice without preliminary pain appears in one

past middle age it is perhaps as commonly due to gall-stones as to anything else. It is here that we may turn to cholecystography for help in the diagnosis, although we may fail to receive it. For theoretically if, in the current fashionable slang, there is pathology of the gall-bladder, the shadow of organ should not be seen in the radiogram, and most frequently it is not, as the gall-bladder is usually seriously diseased when containing multiple faceted stones. But the usefulness of cholecystography is nevertheless now firmly established largely by its caprices, and we may see a gall-bladder as an opacity surrounding stones showing themselves as translucent areas or ring-like shadows, or occasionally as an opacity not fading for 24 hours or more and thus indicating defective emptying of the organ by reason of obstruction; and very rarely we may see a common bile-duct itself depicted as an opacity linear or segmented by stones.

HEPATIC INSUFFICIENCY IN RELATION TO GALL-STONES AND THEIR TREATMENT

When Gwynne Williams in 1932 collated the figures of a collective inquiry instituted by the Association of Surgeons, he found that the mortality of operations for stone in the common bile-duct all over the kingdom was 14.65 per cent. The figure was roundly condemned as deplorable by Lord Moynihan, but the fact remains that nearly 15 per cent. died, and I feel sure that in searching for the cause we must turn to the state of the liver. Depressed function was given as the cause in no more than 16 of 91 deaths, but I believe that it was an important accessory in determining a large number of the fatalities assigned to other causes.

When after apparently successful operations for stone in the common bile-duct patients fail to make rapid recovery, in the absence of chest complications or catastrophes like peritonitis one of two things is usually happening.

First of all, where a tube is draining the common bile-duct, large quantities of fluid may escape in the form of bile. This may rapidly and completely exhaust the patient so that in 48 hours he is visibly wasted and clearly failing. We often treat the loss successfully by collecting the bile and returning it to the patient either by œsophageal or rectal tube, the latter method having surprisingly enough no enema-like action. It is likely however that the essential part of the loss that is affecting the patient is that of chlorides rather than of the special bile contents, and intravenous or rectal saline injections during the first day or so will usually suffice to prevent this occurrence or to restore condition, until mouth feeding is firmly established. That the patient is suffering from the effects of loss of chlorides may be disproved or suggested by noting their presence or absence in the urine.

The second and far more serious event is the lapse of the liver into inefficiency. When this happens the cause may not at once be recognised unless we have learned the clinical appearances of hepatic failure. The patient may make a good recovery from the operation but after a day becomes apathetic and sleeps continually, the drowsiness deepening with remissions and finally passing into a coma from which he cannot be roused. Whether previously jaundiced or not his colour soon changes to a dirty greenish-yellow tinged with an ugly cyanosis. From this condition patients may recover spontaneously but they may die rapidly or they may continue in the same state with remissions for many days. I have seen this only once in gall-stones where a hard-

drinking patient with a large liver had a stone in the common bile-duct, and I mistook it at first for post-operative cerebral thrombosis. The giving of a relatively large dose of glucose intravenously, say 30 grammes in a 5 per cent. solution, brings these people back to consciousness in a most satisfactory way.

If we believe that the functional state of the liver is the determining factor in the majority of the serious cases, the question at once arises how may we estimate its state of efficiency. I believe that at the present time little can be learned from laboratory tests unless the glycogenic function is practically exhausted, when the lævulose-tolerance test gives a clear answer. If a person swallows a quantity of lævulose he should absorb it completely in his liver so that it never reaches the general circulation. When in carrying out this test lævulose is found in the peripheral blood, the deduction is that the liver is practically out of action. We have stressed the hepatic insufficiency resulting from obstruction of the common bile-duct, but just as in prostatic disease damaged kidneys may be adequate for the body's needs, but with the onset of infection may very rapidly become gravely insufficient, so with the damaged liver the onset of cholangitis may change a case of common bile-duct obstruction from a serious but easily curable state into a most desperate business.

The subject of hepatic insufficiency naturally brings us to the question how may we attempt to obviate its disasters, and how may we treat patients so threatened. Our main resources are the general preparation of the patients for operation and the administration of glucose. In the general preparation the most important thing appears to be that we must not be in a hurry to operate but rather prepare the patient with perhaps a week or more of rest in bed, and with suitable feeding, glucose being added to the items of diet wherever possible. We delay operation not because we are frightened of jaundice, an old bugbear on which we need not lay too much stress, but because we wish to fortify the liver and to restore the patient's sugar and other metabolism, and also not less to make use of the stimulus to recuperative power that rest in bed seems always to provide. When an operation has been performed and we fear hepatic failure, it is usually sufficient to give the patient rectal or intravenous glucose injections until normal feeding is re-established, but it is rarely necessary to administer the large quantities often given by continuous infusion over many days, a method at the present time very much overdone as is our way with medical fashions. It is easily possible by the excessive intravenous or even rectal administration of fluid to produce œdema of the extremities, and remembering how many of these folk are fat, lethargic, and bronchitic, the possibility of at the same time embarrassing the lungs with watery secretion must not be forgotten.

I fear that I have overstressed the dangers attending stones in the common bile-duct but the average case is of course very different from the picture of hepatic insufficiency which I have outlined. It is obvious that the road to success in the treatment of these cases lies in the study of the group in which there is real danger, and it is perhaps fortunate that owing partly to danger to life of continued gall-stone jaundice, and partly to the visible disfigurement of the principal symptom, the surgeon is forced in almost all cases to undertake operative treatment. He will thus achieve gratifying success in many patients precariously ill; but he should remember that a

courageous operator is a surgeon with the patient's courage in his trust, and that where life is in danger operative interference should be kept to the necessary minimum directed towards restoration of liver function. There are thus cases in which the sole immediate aim of the surgeon should be the temporary drainage of the liver passages. I propose to say nothing more regarding the actual operative treatment.

ACCIDENTAL LIGATION OF THE COMMON BILE-DUCT

This next cause of obstructive jaundice follows in logical sequence preceding references to the operative treatment of gall-stones, and though I have fortunately so far no experience of the immediate results of the catastrophe I have operated upon two patients who had suffered it. In the first the duct had been incompletely occluded, and during the succeeding year he had recurring attacks of jaundice with intense itching, his condition being otherwise good. Exploring his abdomen I found that the bile-duct appeared to end in a bulbous dilatation as big as the end of one's thumb, but that leading from the duct higher up there was a narrow track passing to the duodenum and compressed by the expanded stump of the duct. The bulbous portion was joined to the duodenum by anastomosis and he made a good recovery. The second patient was in a far more serious plight and in the event she died. Aged 29, she had undergone cholecystectomy a year before and had suffered from unrelieved jaundice with itching ever since. Frail with hardly any muscle left on her bones she had a greatly enlarged liver and an intense dirty greenish-brown jaundice; her hæmoglobin was reduced to 50 per cent.; there was perpetual nausea and frequent vomiting. In her skin were many deposits of cholesterol, one of which formed a large tumour in the buttock, and in her muscles were a number of firm tumours that were hæmatomas in various stages of organisation. Three weeks were spent in preparing her for operation by administration of glucose, calcium chloride, and three blood transfusions, but we were unable to produce a satisfactory improvement in her hæmoglobin percentage. At operation no trace of the common bile-duct could be found among a mass of adhesions, only the stump of the divided hepatic duct inside the liver substance that had swollen and nearly concealed it. After freeing a small area of the duct from the liver substance it was joined to the duodenum, but she died 36 hours later, and at the post-mortem a pint of blood was found in the operation area. This patient died of a combination of hepatic insufficiency and hæmorrhage and I believe she would have had a better chance if I had attempted only the temporary drainage of the hepatic duct to the exterior, postponing anastomosis.

THE RELATION OF HÆMORRHAGE TO JAUNDICE

It is well known that jaundice favours the occurrence of hæmorrhage and it is thought that this is due to the presence of bile salts in the blood stream. There is no deficiency of calcium salts and therefore the giving of calcium before operation to prevent hæmorrhage in the presence of jaundice is probably quite useless; indeed it was administered in the last case in order that no known precaution might be omitted in a desperate situation. The two measures that seem to be useful are the administration of glucose and blood transfusion. The last case is the only one where I have encountered difficulty over hæmorrhage in jaundice, and it is to be noted that in this extreme example all known precautions were taken, but they proved inadequate to prevent the recurrence of the

oozing from the cut surface of the liver that had occurred in the operation but that had been seen to have ceased before closing the abdomen. Nevertheless, I believe that except in unusually severe cases such as this, we need not fear hæmorrhage if before the actual performance of our operations we spend a little time, say a week or so, in getting our patients into good condition by ordinary feeding, by giving glucose, and occasionally by blood transfusion.

DISEASES OF THE PANCREAS

On obstruction of the common bile-duct by disease of the head of the pancreas I do not intend to say much. The disease is commonly either chronic pancreatitis or carcinoma and in the latter case it is well known to produce obstructive jaundice with distended palpable gall-bladder, and later the evidences of pancreatic dysfunction. Yet there are cases in which the pancreatic insufficiency provides the first symptom and the biliary obstruction is late. Chronic pancreatitis on the other hand may easily be confused with gall-stones. One has seen these people with attacks of abdominal pain recurring over years and associated with jaundice. Cholecystography may show a normal or enlarged gall-bladder, and only at operation is it discovered that the pancreas is thickened either locally in the head or universally throughout the organ. It may be difficult to decide at the time of operation whether the pancreatic condition is inflammatory or carcinomatous, and on two occasions in the last year or so I have made a wrong diagnosis at operation. In one of these cases a man in his twenties had jaundice unaccompanied by other symptoms, and at laparotomy proved to have a firm enlargement of the whole pancreas thought to be inflammatory. Cholecyst-gastrostomy gave temporary relief but in a short time he died, the cause being carcinoma of the pancreas.

CYSTIC DILATATION OF THE COMMON BILE-DUCT

One other cause of obstructive jaundice may perhaps be mentioned despite its rarity. I refer to cystic dilatation of the common bile-duct, of which disease we have had in University College Hospital during the last ten years 4 cases. The condition is one in which the bile-duct is dilated either moderately to take the form of a bile-containing cyst about the size of a tangerine, or greatly to one containing gallons of bile. The reason that I wish to speak of it is that although it is only in comparatively recent times that the condition has been recognised, it often has a clear symptomatology and clinical picture.

The patients are usually women and the symptoms often begin either in childhood or adolescence. They consist of attacks of pain in the upper abdomen and back with vomiting and jaundice. Sometimes infection is superadded to the picture when there are fever and rigors; but curiously enough, although infection is common, gall-stones are rarely produced. The actual lesion present is dilatation of the common bile-duct which may be spherical or saccular, and the exact way in which the recurring attacks of biliary obstruction occur is unknown. It is thought that they may be associated with a disturbance of neuromuscular mechanism, in the walls of the biliary passages and in the sphincter at the duodenum, but it is certain that in some of the cases there are similar dilatations in the liver.

These patients respond extremely well to the making of a stoma between the cyst and the duodenum. The condition is of some importance clinically because

it is usually missed, and in two of my three cases operations had previously been done, the true nature of the cause of the jaundice not having been recognised even at operation. Recently, however, I operated upon a woman aged 38 in whom the clinical syndrome in question had been accurately reproduced in the form of pain, jaundice, and vomiting in monthly attacks since the age of 13. The cause was a congenital deformity of the gall-bladder that had resulted in external pressure on the hepatic duct.

EFFECT OF RELIEVING OBSTRUCTION

Lastly, may I say something about the disappearance of jaundice after correction or short-circuiting of obstruction in the common bile-duct. Visible jaundice sometimes takes a long time to disappear and three or four weeks after removal of a stone a tinge of jaundice may still be present. Such delay need occasion the surgeon no anxiety because it does

not signify that there is still any remaining obstruction in the duct. The effect of successful operation is nevertheless immediately felt by the patient who always finds that 24 hours after the operation, sometimes even on waking from his anæsthetic, itching has disappeared. If after an operation itching were not to disappear the surgeon would therefore at once have cause for uneasiness as it would certainly mean that the common bile-duct was still obstructed. The explanation of these well-known clinical facts probably lies in the difficulty experienced by the body fluids in removing bile deposited in the tissues rather than any delay in its disappearance from the blood stream. If therefore jaundice is rather long lasting and the surgeon has any anxiety about it, he has but to examine the blood when if the obstruction has been successfully treated no bile is found in the serum and he can prophesy a successful issue.

PANEL AND CONTRACT PRACTICE

Consultation Hours

THE terms of service provide that a practitioner shall attend and treat at the places, on the days, and at the hours to be arranged to the satisfaction of the insurance committee, any patient who attends there for that purpose. When applying to have his name included in the medical list the practitioner is required to indicate the hours and the days and places at which he will be available for consultation by insured persons. It is no part of the committee's functions to say to a practitioner who applies for inclusion in their list, "the hours you propose will not do," particularly if the applicant is merely starting practice and not buying an established practice. So long as he has no patients on his list, half an hour a day might be regarded as more than sufficient for the surgery consultation period; even if he states that he has a surgery only on certain days of the week, it might well be argued that insured persons who apply for inclusion in his list are aware of that fact and can have no cause of complaint. But in the case of a practitioner who has a number of patients it causes embarrassment to an insurance committee to find, for instance, that the doctor has no consultation period between 8 P.M. on Friday and 6 P.M. on Monday, and it is even less satisfactory to receive an application for inclusion in the list from a doctor who proposes to give a surgery period of one hour on Monday evening and one hour on Thursday evening. It would, of course, be very difficult to find a standard which would apply equally to practices of units and of thousands, but it might not be regarded as unreasonable that insurance doctors should have a definite consultation period every day, except Sundays. So many insured persons seem to be under the mistaken impression that they may see their doctor only during his recognised consultation periods that it is surely in the doctor's own interests that he should provide adequate time for surgery attendances, rather than have to make unnecessary home visits.

Prescribing Costs

Staffordshire panel committee have been drawing the attention of insurance practitioners in their area to the increasing cost of providing medicines. The letter runs:

"Well over one million prescriptions were issued in the area during the year 1934. A serious feature is the increase in the number of prescriptions issued by insurance practitioners in this county. The figures have steadily risen

from 3.67 prescriptions per insured person in 1931 to 4.07 in 1934, an increase which is not justified by comparison with the average increase in 16 other areas in the Midlands—3.72 to 3.88. For the first six months of 1935, the position is even worse. The Staffordshire increase of 0.4 per insured person represents an additional 100,000 prescriptions per annum. This addition is due not only to an increase in the number of forms issued by doctors, but also to a growing and questionable tendency to order two or more medicaments at one and the same time. Even though ordered on one form, each medicine or appliance carrying a separate dispensing fee counts as a separate prescription. This point should be borne in mind. Undue prescribing reacts unfairly on the chemists."

The reminder that when two or three medicaments are ordered on one form each medicine or appliance counts as a separate prescription and carries a separate dispensing fee is a timely one.

Spinal Jackets

Under the provisions of the Medical Benefit Amendment Regulations, 1934, an insurance practitioner may now prescribe (or supply and claim the cost of) spinal jackets when required for treatment of fractures, dislocations, or diseases of the spine. This appliance is, of course, rather expensive, and it is often much cheaper to repair a jacket than to supply a new one. Insurance committees have usually taken the view that the greater includes the less; ergo, it is proper to allow the cost of repairing a spinal jacket rather than to supply a new one, if the doctor is satisfied that the repair will make the appliance fully satisfactory. An enterprising pricing bureau has, however, drawn the attention of an insurance committee to an official letter of the Ministry dated October, 1929, in which it is stated that "no provision is made under the medical benefit regulations for the payment of the cost of repairing a prescribed appliance. The amount in question could not, therefore, be properly charged to the practitioners' drugs account, except by special sanction given as a result of an application by the insurance committee concerned."

If the position is still as indicated it is time the regulations were amended. Evidently the pronouncement of the Ministry has either been regarded with a Nelsonian eye or the official letter was sent to only one committee and safely interred in its archives, for we learn that an insured person in another area has had four spinal jackets since 1925 and repairs to his various jackets have been paid for by the insurance committee on no fewer than ten occasions—at a total cost of £34 7s. 10d.

PUBLIC HEALTH

Ultra-violet Treatment Given by Laymen

LAST month the Huddersfield town council were told that the baths' superintendent had been authorised to purchase an ultra-violet ray lamp. On which Dr. J. W. Hirst, physician to the Huddersfield Infirmary, said he thought he would be failing in his duty if he did not protest against permission being given to unqualified, unskilled people to give ultra-violet treatment without medical supervision of apparatus and persons treated. He moved that the minute be not confirmed, and his amendment was carried.

The question of the competence of a baths' committee to install ultra-violet ray apparatus arose in 1928 in Manchester and drew a wise pronouncement from Dr. R. Veitch Clark, the medical officer of health, which was reported in our columns at the time (*THE LANCET*, 1928, i., 418). He held that there was only one way in which the use of ultra-violet rays should be regarded—namely, as means of medical treatment. Unless a scheme provided for adequate medical supervision, both of the clinic and of the people who received treatment, it could not properly be adopted by a public health authority; or, one might add, by any authority or medical body responsible for the safety of the patients. Dr. Veitch Clark went on to say—and here again experience has amply proved him right—that dosage must be carefully graduated and controlled to suit each individual, if the possibility of harm is to be avoided. This control could only be effected properly by medical supervision, and the Ministry of Health had refused their approval of installation except under these conditions. Later deputations from the Manchester baths' committee visited Leeds, Bradford, and Stockport, where ultra-violet ray apparatus was installed in the public baths, and were informed that the innovation had proved a great success. There was no medical supervision while the treatment was given. The permission of the Ministry of Health for the installation had not been asked, and the medical officers of health of the three towns had raised no objections. Nevertheless, Dr. Veitch Clark stood firm and said he saw no reason to alter the views he had expressed.

Dr. Hirst's stand for adequate medical supervision revives the controversy. His protest is countered in the newspapers by statements intended to show the success obtained in Leeds, where ultra-violet ray apparatus was installed in 1927 and 100,000 treatments have been given—evidence of local satisfaction with the service. The good results are attributed by the baths' directors to employment of "trained" men to give the treatment; but this is a point on which there can be more than one opinion. It is true that skilful administration of treatment and care of apparatus present few technical difficulties, but the selection of suitable cases and the dosage for persons who suffer from some definite deviation from the normal—not merely convalescents or slightly subnormal individuals—is by no means so easy. Such tasks should not be undertaken by those who have no medical training and some acquaintance with ultra-violet therapy. The success of the Leeds scheme must be put down to the policy of working in conjunction with the medical profession and therefore to their selection of cases. Treatment is refused to anyone under medical care except on the doctor's

recommendations; cases of suspected illness are referred for medical opinion; and preliminary estimation of skin-reactions by erythema tests precede treatment. The Leeds experiment therefore closely resembles the procedure followed at many clinics, but it seems to differ nevertheless in certain important respects. In the first place the technical (non-medical) attendants are required to distinguish the normal (suitable) from the abnormal (not suitable) case. This leaves a definite possibility of serious error: for example, it is by no means easy even for the skilled medical examiner to detect the very early or the quiescent cases of pulmonary tuberculosis and to exclude them; the early case of diabetes might equally be missed; and patients with carcinoma, who sometimes show initial improvement in general health under ultra-violet treatment, might be regarded merely as persons in need of a tonic.

Stricter regulations seem to be enforced in Bradford, where it is reported that treatment is given only under a doctor's prescription. If this includes prescription of times of exposure and frequent periodic re-examination, the usual safeguards insisted upon in clinics have been adopted by this authority. Placing the apparatus in a room or building adjoining public baths presents no drawbacks, so long as its satisfactory insulation is achieved; indeed, the proximity of the baths becomes in these circumstances an advantage for the patients who will not require to undress more than once.

In arranging all the schemes, however, it seems to us essential that a medical authority should choose the apparatus and be responsible for the conditions of administration. A medical man or woman should select the patients, prescribe their irradiation, periodically inspect their treatment, and discharge them, and also take responsibility for the qualifications of the staff.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED
NOV. 2ND, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2975; diphtheria, 1271; scarlet fever, 30; acute pneumonia (primary or influenzal), 822; puerperal fever, 25; puerperal pyrexia, 118; cerebrospinal fever, 11; acute poliomyelitis, 22; acute polio-encephalitis, 2; encephalitis lethargica, 5; continued fever, 1 (Paddington); dysentery, 28; ophthalmia neonatorum, 75. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the infectious hospitals of the London County Council on Nov. 8th was 3178, which included: Scarlet fever, 1184; diphtheria, 1247; measles, 59; whooping-cough, 231; puerperal fever, 20 mothers (plus 11 babies); encephalitis lethargica, 279; poliomyelitis, 10. At St. Margaret's Hospital there were 19 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox or enteric fever, 10 (0) from measles, 3 (1) from scarlet fever, 4 (2) from whooping-cough, 44 (6) from diphtheria, 56 (15) from diarrhoea and enteritis under two years, and 39 (5) from influenza. The figures in parentheses are those for London itself.

Diphtheria proved fatal in 5 cases at Liverpool, 3 at Sheffield and Birmingham, 2 at Dagenham, Ealing, West Ham, Portsmouth, Leeds, and Sunderland. Manchester reported 4 deaths from measles, Liverpool 2. Influenza is credited with 5 deaths at Manchester, 3 each at Sheffield and Birmingham, no more than 2 elsewhere.

The number of stillbirths notified during the week was 254 (corresponding to a rate of 41 per 1000 total births), including 31 in London.

CORRESPONDENCE

A FINAL APPEAL TO MEDICAL BENEVOLENCE

To the Editor of THE LANCET

SIR,—By your kindly permission I appealed to your readers in October for contributions towards our Christmas Gift Fund. I am very grateful to those who have already responded, but the amount received up to date is not sufficient to allow of Christmas gifts being given to more than a third of our beneficiaries.

The General Election is over, and Christmas is near at hand; may I therefore appeal once more in the hope that contributions will be forwarded to the hon. treasurer, Royal Medical Benevolent Fund, 11, Chandos-street, London, W. 1, lest any of our poor people be disappointed this year.

I ask all who have well-being in life to give as generously as possible and without delay, so that gifts may be distributed in time.

I am, Sir, yours faithfully,

THOS. BARLOW,

President of the Royal Medical Benevolent Fund.

Nov. 15th.

IMMUNISATION AGAINST DIPHTHERIA: ALUM PRECIPITATED TOXOID

To the Editor of THE LANCET

SIR,—In view of the increasing use of alum precipitated toxoid in connexion with diphtheria prophylaxis, it may be of interest to publish my own experience with this method during the course of the current year. The particulars are as follows:—

	Manufacturer.			Total.
	A	B	C	
Schick-negative				
1 month	162	19	3	184
after 2 months	11	—	—	11
3 „	2	—	—	2
Total Schick-negative ..	175	19	3	197

Patients Schick-negative in 1 month .. 93 per cent.

„ „ „ 3 months .. 100 „ „

Cases treated with two doses of 0.1 c.cm. A.P.T. at 1 month interval (included above under "B").

9 cases Schick-negative 1 month after last injection.

(N.B.—No pre-Schick done but all were 1-3 years old and presumably positive.)

Most of the injections were given subcutaneously and the proportion of reactions varied from 3 to 5 per cent. with different batches. None were serious.

I am, Sir, yours faithfully,

A. T. POWELL,

Nov. 9th. Medical Officer of Health, Walthamstow.

GASTROCOLIC FISTULA

To the Editor of THE LANCET

SIR,—Dr. Picton Davies, in his valuable article on Prognosis of Jejunal Ulcer published in your issue of Sept. 21st (p. 678), refers to three cases of gastrocolic fistula, all of whom died. My experience of this complication of jejunal ulcer leads me to believe that the prognosis is far less serious than these figures would indicate. We have had 7 cases of gastrocolic fistula among 90 of anastomotic ulcer in New Lodge Clinic since 1921. Of these 6 were operated upon by Sir Charles Gordon-Watson, the late Mr. R. P. Rowlands, Lord Moynihan, Sir Thomas Dunhill, Mr. Grey Turner, and Mr. Gaymer-Jones respectively, without a single death. In each

case the stomach, jejunum, and colon were separated from each other, the original anatomy being restored. In 5 nothing more was done, but in 1 an anterior gastrojejunostomy was performed. One patient subsequently had a perforated duodenal ulcer, from which he recovered. In addition a man of 64, first seen in March, 1932, 28 years after a gastrojejunostomy had been performed for a duodenal ulcer, presented definite radiological signs of a gastrocolic fistula. The usual post-ulcer régime with occasional lavage of the stomach and colon has kept him free from symptoms ever since, the fistula being apparently valvular and only giving rise to occasional trouble.

In 1928 Mr. R. C. Brock (Guy's Hospital Reports, 1928, lxxviii., 178) reported 3 cases of gastrocolic fistula following jejunal ulceration which had been operated upon by Mr. Rowlands; these included one of the New Lodge Clinic cases. He referred in his paper to 5 other cases which he had found in the Guy's records; no deaths occurred among the eight. He has kindly searched the Guy's records since 1928 and finds that 4 more cases have undergone operation with 2 deaths. The combined New Lodge Clinic and Guy's Hospital records give 17 cases with 2 deaths, a mortality of only 12 per cent. These remarkable results are of course mainly due to the exceptional skill of the surgeons concerned, but an important factor in the low mortality has, I believe, been the preparation of the patient by thorough lavage of the stomach and colon for several days before the operation.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, Nov. 6th.

THE INDEPENDENT MIDWIFE

To the Editor of THE LANCET.

SIR,—Your sympathetic leading article of Nov. 2nd, together with the valuable data contained in Lady Forber's Fynes-Clinton lecture, brings out very clearly the deplorable position of the private midwife. Most of those who have studied the question and read the report of the Joint Committee will concur in the view that a salaried service of whole-time midwives is likely to prove the only satisfactory way of escape from a most unhappy state of affairs. But, assuming the desirability of a service of competent midwives working under local authorities, voluntary associations, and hospitals, are there not certain questions which must be settled before it is possible to organise such a service on a national, or a compulsory, basis? For example, a successful whole-time service means in effect a limited and closed service, and therefore some control must be exercised over the number of new entrants to the profession.

The number of midwives now in practice is considerably in excess of those actually required, and in planning a midwifery scheme for any area it will not be easy to provide for the numerous midwives who, for various reasons, cannot be absorbed into the scheme. It would be unsatisfactory from the point of view of the local authority to compensate the midwives who were excluded, if newly qualified women could freely settle in the area as pin-money practitioners; neither would it be fair to continue to train many midwives who would have no chance of obtaining salaried posts. Therefore, the number of pupils, and consequently the number of training schools, would have to be reduced. If this is done,

how are the smaller maternity hospitals to be staffed, and who will make good the reduction of income from the loss of pupils' fees? Other matters which it seems desirable, if not essential, to settle concern the length and content of the training to be given to the new type of midwife who will gradually take over the work whole-time; what period it should cover; whether it should be based on general nursing or merely extend the midwifery experience; what provision should be made for the nurse who desires an additional qualification but does not wish to take up midwifery as a serious profession; how to reconcile the competing claims of the medical student and pupil-midwife for the use of clinical facilities.

There is also the question of improving and extending maternity nursing. Is it advisable to utilise the highly qualified midwife as economically as possible, and, following the example of Holland, train a body of registered maternity nurses to work for doctors and to assist the new midwives themselves?

These and other questions associated with the practice of midwifery are common knowledge; they have presumably remained unanswered because no single organisation has power and authority to deal with them. Obvious advantages will follow if the introduction of a salaried service of midwives makes it necessary not only to discuss them, but also to find a solution and remedy.

I am, Sir, yours faithfully,

Limpfield, Nov. 11th.

JANET M. CAMPBELL.

MEDICINE AND THE LAW

Medical Certificates by Deceased Practitioners

IN *Simon v. Simon* and others Mr. Justice Bucknill decided an interesting point on the evidential value of a medical certificate given by a doctor who had since died. A young woman obtained a medical certificate for a particular purpose in 1929; was it admissible in evidence for the purpose of refuting a charge against her relating to a time prior to the date of the certificate? Could it come within the rule of law which allows evidence to be given of declarations made by deceased persons in the ordinary course of their duty? Or did the usual rule against hearsay evidence govern the case and must the witness appear in open court and be cross-examined? The court decided that the certificate of the dead doctor was inadmissible. The law allows an exception where a deceased person had a duty to perform and had the duty also of recording that he had performed it. In the case under discussion the dead doctor had no duty to record the result of his examination of the young woman or to make any written statement of the result. He did undoubtedly give the certificate under his contract with the patient as any other professional man might give an opinion in the course of his practice. But this certificate was not within the exception allowed by law. Mr. Justice Bucknill thus followed Lord Merrivale's decision in *Mills v. Mills* (1920). There a charge of adultery was based on an allegation that the respondent contracted gonorrhoea in 1909 and that the petitioner was free from that disease, so that the husband could not have contracted it from his wife. Dr. N., a consulting physician who had treated the husband in 1908 and 1909, was dead. Dr. J., his successor in practice, was in possession of his case-books and notes. Dr. J. attended the court on subpoena to produce the case-book which was understood to contain the requisite information: he objected to produce the book unless

ordered by the judge to do so. "I cannot see," said Lord Merrivale, "that any duty was cast upon the consulting physician to make these entries; he was practising alone and not in partnership; he did not make the entries in pursuance of any duty to the persons consulting him nor in pursuance of any statutory order or any binding rule of the profession." Not being made under any such duty, the entries were inadmissible.

Prosecution under Venereal Diseases Act, 1917

Proceedings against Robert Vivian Storer, initiated by the Director of Public Prosecutions under the Venereal Diseases Act, stand adjourned till Nov. 28th. The charges relate to treatment of patients, and advertisement of the offer to treat patients, by a person who is not a duly qualified medical practitioner. The defendant, it was stated, was brought before the General Medical Council last May on a matter of professional discipline and it was ordered that his name be erased from the Register. The present proceedings will be more fully discussed when the case is concluded.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Capt. H. R. S. Hull to *Malabar* for R.N. Hospital, Bermuda.

Surg. Comdrs. T. N. D'Arcy to *Victory* for R.N. Hospital, Haslar, and J. H. B. Crosbie to *Victory* for R.N.B.

Surg. Lt.-Comdrs. H. A. Clarke to *Enterprise*, and W. P. E. McIntyre to *Drake* for R.N.B.

Surg. Lt.-Comdr. J. Hamilton to be Surg. Comdr.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. (D) H. P. Buchanan to be Surg. Lt.-Comdr. (D).

Surg. Lt. K. E. L. Yuill to *Vernon*.

D. R. Maitland entered as Proby.-Surg. Lt.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. C. J. Coppinger, O.B.E., having attained the age for retirement, is placed on ret. pay.

Maj. and Bt. Lt.-Col. E. A. P. Brock to be Lt.-Col.

Candidates granted short-service commissions as lieutenants on probation in the R.A.M.C.: S. J. Meyersohn, Univ. of the Witwatersrand; G. A. Weir, Glasgow Univ.; S. Brown, Edinburgh Univ.; W. N. L. Haynes and M. H. P. Sayers, St. Thomas's; W. N. J. Clarke, Queen's Univ., Belfast; J. F. Wilson, Edinburgh Univ.; P. J. Geoghegan, Univ. Coll., Cork; J. A. Dorrán, R.C. of S., Ireland; J. R. Kellett, Trinity Coll., Dublin; J. D. Cruickshank, Birmingham Univ.; C. P. Stevens, Edinburgh Univ.; J. H. Caverhill, St. Thomas's; G. A. E. Harman, Glasgow Univ.; K. G. F. Mackenzie, St. Thomas's; J. A. Farfor, Edinburgh Univ.; H. N. Perkins, St. Mary's; P. B. Hanbury and D. P. Stevenson, Guy's; A. B. Dempsey, London Hospital; and T. D. M. Martin, St. Thomas's.

TERRITORIAL ARMY

Maj. F. W. Widgery receives pay and allowances of his rank. W. Thomson (late Cadet Lee-Corpl., Glasgow Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

ROYAL AIR FORCE

Flight Lt. G. M. Anderson is promoted to the rank of Squadron Leader.

Squadron Leader L. C. Palmer-Jones to R.A.F. Officers' Hospital, Uxbridge, for duty as Medical Officer.

Flight Lt. V. H. Tompkins to No. 28 (Army Co-operation) Squadron, Ambala, India.

Flight Lt. R. K. Muir relinquishes his short service commission on transfer to the I.M.S.

R. F. Courtin is granted a short service commission as a Flying Officer for three years on the active list and is seconded for duty at the Royal Victoria and West Hants Hospital, Bournemouth.

OBITUARY

WILLIAM GEORGE RICHARDSON,
F.R.C.S. Eng.

THE death of Mr. W. G. Richardson at Keswick on Oct. 27th, at the age of 72, removes an old and valued surgical member of the Newcastle school. Although educated at the Leys School, Cambridge, and a student of St. Bartholomew's Hospital, Richardson was born in Gateshead and returned to Newcastle-on-Tyne when he had obtained useful surgical experience elsewhere, and remained on the staff of the Royal Victoria Infirmary until his retirement as consulting surgeon ten years ago. His health was never robust, but he was exceptionally gifted with his fingers and his surgical results were very good, especially in difficult bone cases. His study of the prostate gland gained him the Heath prize essay in 1904, and although he wrote no book many of his interesting abdominal and cerebral cases were set out in our own columns at the time. He was always a lover of country life and it was to gratify a deep instinct of his nature that on retirement he went to settle in the Lake district.

Dr. A. W. Wakefield, one of his Keswick friends, writes:—

"It is difficult to realise that never again shall we see the familiar figure of W. G. Richardson, in an old slouch hat, riding around the district on his bicycle. Never again shall we see him hard at work in his garden, which he loved so well, and which, largely by his own personal effort, he had transformed from a rough field to an exquisite flower garden and rockery. Never again shall we interrupt him in the act of making his scientifically hung huge drive gate, or working in his rock garden, to tell him that some urgent surgical case had just been admitted to the hospital and *would* he come and do it? So often, so very often, this happened. And the response was always the same—a groan, a cheery smile, and 'must he leave his garden and get his hands clean?' And almost before one could explain the urgency, he would be at the hospital preparing for the operation. He came to Keswick professedly 'to retire.' Yet I sometimes think that he must have had almost as many emergency operations here as he had before his 'retirement.' He was always ready to help, in any way at all, and most of this work was gratuitous. In fact he had the way of almost making it appear that one was doing him a favour in asking him for help. And on seeing the patient how kindly and sympathetic, how thoughtful and how thorough he was in his examination.

"But his activities were not confined to his garden and his surgery. He loved our Lakeland, he loved our hills, and he loved walking over them and exploring them. The view from the house which he built for himself at Portinscale is lasting evidence of his eye for natural beauty. And besides all this he threw himself whole-heartedly into the local activities and interests. He was a member of the rural district council, and besides being the life and soul of the Keswick and District Bee Keepers' Association, he took an active part in the local horticultural society, the Braithwaite debating society, and the Portinscale reading-room. Whatever he did was done with all his might—always happy, a cheerful smile for everyone, deeply lamented by everybody of every class and creed."

Mr. Richardson married Sarah, daughter of Dr. George Arnison of Allendale Town, who predeceased him. There were no children of the marriage.

THOMAS DUTTON, M.D. Durh., M.R.C.P. Edin.

Dr. DUTTON, who died in London on Monday at the age of 81 years, had lived a varied and strenuous life. Born in Pimlico and educated at Bayswater Grammar School and Guy's Hospital, he went on to Scottish universities, qualifying in Edinburgh in 1878 and taking the Durham M.D. four years later. He was then for several years in the mercantile marine, acting as surgeon on the *Elysia*, *Tongariro*, and *Argonaut*, and later admiralty surgeon and agent for the Chichester division. On his return to London he practised in Holland Park, being active in medical politics, and becoming a consulting physician with special interest in diseases of the digestive organs and in the eradication and care of tuberculosis. In his early days he had taken up yachting and swimming—he was an amateur champion—and his writings covered a large range of subjects on the practice of healthy living. He published a popular book on "Voyaging for Health," and a treatise on "Indigestion Clearly Explained," which ran into several editions, and a handbook on "The Food and Rearing of Children," which also was reprinted several times. Papers on diet, alcohol, hygiene, and tuberculosis appeared in our own columns. He remained in practice until his death, being honorary physician to a welfare clinic in Uxbridge-road. He was also vice-chairman of the Pure Food Society.

JOHN MONRO GIBSON, F.R.C.S. Eng., who died at the Hospital of St. Nicholas and St. Martin at Pyrford, Surrey, of broncho-pneumonia, was son of Dr. H. Wilkes Gibson, formerly in practice in South Hampstead. He was educated at Rugby School and University College, Oxford, where he was an honorary scholar of his college and won the Theodore Williams scholarship for anatomy. He went on to St. Thomas's Hospital from which he qualified in 1920, and held the post of surgical registrar there after residence at the Surrey County Hospital. He then accepted a commission in the R.A.M.C. which he was obliged to relinquish on account of ill-health and became resident medical officer at Pyrford, where he was able to carry on orthopaedic work until a few days before his death at the age of 30 years.

Dr. GEORGE YOUNG, who died at Colchester on Oct. 30th after an operation, was ophthalmic surgeon to the Essex County Hospital and well known as a musician. He was educated at Zurich and Philadelphia, taking his Swiss degree in 1901 and qualifying in this country from the London Hospital in the following year. Turning to ophthalmology, after some experience in London, he went to New York where he became assistant surgeon to the Eye and Ear Infirmary, and ophthalmic surgeon to the Central and Neurological Hospital, taking the M.D. of New York State in 1908. For a time he lectured on physiological optics at Oxford University, and for the last 20 years was in charge of the department at Colchester, where he designed the new ophthalmic clinic opened ten years ago, which is one of the best things of its kind. Dr. Young was equally at home on the piano and violin, and he was able to accompany distinguished violinists like Albert Sammons to their entire satisfaction. In his spare time he used to make violins. He was only 60 years of age.

MEDICAL NEWS

Royal College of Surgeons of England

The annual meeting of fellows and members will be held at the College in Lincoln's Inn-fields, London, on Thursday, Nov. 21st. On behalf of the Society of Members of the College Dr. C. Luther Battenon will move, and Dr. Richard Gillbard will second, a resolution affirming that in the opinion of the meeting members should be represented on the council.

University of London

At meetings of the senate on Oct. 23rd Dr. W. D. Newcomb was appointed associate examiner in pathology at the M.B., B.S. examination in November, and Mr. C. B. Goulden, Mr. R. Foster Moore, and Prof. E. D. Telford examiners for ophthalmology in the M.S. examination in December. Dr. A. M. H. Gray was appointed a governor of the British Postgraduate Medical School, and Sir Ernest Graham-Little, Prof. H. R. Kenwood, and Sir Holburt Waring, members of the court of governors of the London School of Hygiene and Tropical Medicine.

On Dec. 2nd, 4th, and 5th at 5.30 p.m. at the London School of Hygiene and Tropical Medicine, Keppel-street, W.C., Major-General Sir John Megaw will lecture on neglected aspects of public health work with special reference to India.

University of Liverpool

The title of emeritus professor has been conferred on Mr. W. H. Gilmour who retired at the end of last session from the Louis Cohen chair of dental surgery.

University of Sheffield

Mr. T. B. Moutat, F.R.C.S., has been appointed lecturer in surgery to dental students, and Mr. Wilfred Hynes, F.R.C.S., has been appointed to the honorary demonstratorship in operative surgery which Mr. Moutat has resigned. The following external examiners have been appointed:—

Anatomy, Prof. D. M. Blair; physiology, Prof. H. S. Raper, F.R.S.; pharmacology, Prof. A. D. Macdonald; medicine, Dr. J. W. McNeer; surgery, Prof. G. E. Gask; public health, Prof. J. Johnstone Jervis; forensic medicine, Prof. J. E. W. MacFall; dental subjects, Prof. T. Talmage Read, and (for Ph.D. thesis) Sir Norman Bennett.

Royal College of Physicians of Edinburgh

At a quarterly meeting of the college held on Nov. 5th, with Dr. Edwin Bramwell, the president, in the chair, Dr. Helen May Russell (Edinburgh) was introduced and took her seat as a fellow. Sir Harold Gengoult Smith (Melbourne, Australia) and Dr. Sidney Solomon Rosebery (Sydney, N.S.W.) were elected to the fellowship. The Hill Pattison-Struthers bursary in anatomy and physiology was awarded to John Tolland, and the Wood bursary to C. C. Gardner.

The college will shortly award a Kirk Duncanson fellowship for medical research, of which further particulars will be found in our advertisement columns.

Royal Free Hospital

The annual reunion dinner of the old students of the London School of Medicine for Women will be held on Thursday, Nov. 28th, at the Savor Hotel at 7 for 7.30 p.m. Dr. Letitia Fairfield and Commander Stephen King-Hall will be among the guests.

Royal Society of Arts

At an ordinary meeting of this society to be held on Jan. 15th, 1936, at 8 p.m., Mr. L. H. Lampitt, D.Sc., will discuss Food and the World. On Feb. 10th, 17th, and 24th, at 8 p.m., Major-General Sir Robert McCarrison will give three Cantor lectures on Nutrition and the Nation. The address of the society is John-street, Adelphi, W.C.2.

Dental Clinics in Sweden

An official proposal is put forward for the establishment of dental clinics throughout Sweden, with the object of ensuring that everyone's teeth shall be under the care of the State from the age of three onwards. The country would be divided into 425 dental districts with a total of 575 district dentists, the yearly cost being estimated at over 7 million kroner (about £370,000), of which 4.65 million kroner would be borne by the State.

Infants Hospital

A course in infants' diseases for medical officers of welfare centres and others interested in nutritional disorders and dietetics will be given at the hospital, Vincent-square, S.W., from Nov. 25th to Dec. 6th.

Society of Medical Officers of Health

The annual dinner of this society will be held at the Piccadilly Hotel, London, on Friday, Nov. 22nd, at 7.30 p.m., with Dr. W. G. Savage, the president, in the chair. Sir George Newman will be the guest of honour, and Sir Kingsley Wood, Minister of Health, intends to be present.

British Health Resorts Association

The annual general meeting of this association will be held at the Institute of Hygiene, 28, Portland-place, London, W.1, at 4 p.m. on Thursday, Nov. 28th, with Lieut.-Colonel R. H. Elliot in the chair. The general secretary is Dr. Alfred Cox, and he may be addressed at 199, Piccadilly, W.1.

Royal Dental Hospital

The 26th annual clinical at home of this hospital will be held on Saturday, Nov. 23rd. During the morning there will be demonstrations at the hospital and at Charing Cross Hospital, while in the afternoon there will be exhibitions of clinical cases and specimens.

Glasgow University Club, London

The annual dinner of this club will be held at the Trocadero Restaurant, Piccadilly, W., on Friday, Dec. 6th, at 7.15 for 7.30 p.m., with Prof. J. Graham Kerr, F.R.S., in the chair. Any Glasgow University men who, though not members of the club, desire to attend, are asked to communicate with the hon. secretaries, 62, Harley House, N.W.1.

Research Scholarship in Tuberculosis

A Walton Marsh Barnes research scholarship on the biochemistry of tuberculosis, tenable in the pathological department of the City of London Hospital for Disease of the Heart and Lungs, Victoria Park, E., will shortly be awarded. The scholarship is of the value of £500 for the first year, and may be held for a further two years with annual increments. Applications should reach the secretary of the hospital by Nov. 29th.

Prize in Anaesthetics

The *British Journal of Anaesthesia* is offering a prize of ten pounds for the best essay on any subject concerned with the administration or physiology of anaesthetics submitted before August 1st. The essays should not exceed 4000 words in length and candidates must possess a medical qualification within the British Empire. Further particulars may be had from the editor of the journal at 19, St. Andrew's Mansions, Dorset-street, London, W.1.

St. George's Hospital, London

On Nov. 5th Miss Marie Tempest opened the new ward at this hospital for the use of the theatrical profession, which is the result of the matinée given at Drury-lane to celebrate her fifty years on the stage. The ward is to be called after her.

A cheque for £746 has been received from the management of Grosvenor House, Park-lane, which is the hospital's share of the gate-money of the Antique Dealers' Fair.

Ulster Medical Society

At the opening meeting of this society on Oct. 24th Dr. S. R. Hunter, on retiring from the chair, welcomed the newly elected president, Dr. Foster Coates, who gave an address on the importance of vitamins in dietetics. Referring to vitamin-D deficiency he pointed out that where there was much sunshine less vitamin was required in the diet; whereas in polar regions, where the sunlight was less intense and the body more completely clothed, the function of protection passed from the light to the diet. In Britain to-day the adaptation of diet to climate was incomplete. At the close of his address Prof. R. J. Johnstone and Sir Thomas Houston proposed and seconded a vote of thanks.

Warneford Hospital, Leamington

An anonymous donor has given £1000 for the endowment of two cots at this hospital. The fund for the new maternity block amounts at present to £4174.

Prince of Wales's Hospital Club

The annual dinner of the club of The Prince of Wales's General Hospital, Tottenham, will be held at the Trocadero Restaurant on Thursday, Nov. 28th, at 7.45 for 8 p.m., with Mr. Norman Fleming in the chair. The hon. secretary of the dinner is Mr. A. Lowndes Yates 36, Harley-street W.1.

Lectures on Tropical Hygiene

A course of lectures and demonstrations on tropical hygiene will be given by Lieut.-Colonel H. B. Newham, Mr. H. H. Clay, and Sir Malcolm Watson from Dec. 2nd to 12th at 4 p.m. for men and women outside the medical profession who are proceeding to the tropics. Further information may be had from the organising secretary of the Ross Institute of Tropical Hygiene, London School of Hygiene and Tropical Medicine, Keppel-street, W.C.1.

International Congress of Physical Medicine

The sixth international congress of physical medicine will meet in London from May 12th to 16th. Lord Horder will preside over the British section and other officers will be: Sir Robert Stanton Woods (chairman of the executive committee), Sir Henry Gauvain (chairman of the general committee), Dr. Albert Eidinow (hon. secretary), and Dr. Alexander Cavadias (hon. assistant secretary). Further details may be had from Dr. Eidinow at 4, Upper Wimpole-street, London, W.1.

Medico-Chirurgical Society of Edinburgh

The following officers have been elected for the coming session: president, Dr. David Huskie; vice-presidents, Dr. John Orr and Mr. W. J. Stuart; councillors, Mr. Norman Dott, Dr. Rae Gilchrist, Mr. C. F. W. Illingworth, and Dr. C. W. Somerville; treasurer, Mr. Walter Carlow; secretaries, Mr. J. J. M. Shaw and Dr. T. R. R. Todd; and editor of *Transactions*, Dr. A. Fergus Hewat.

At a meeting to be held on Dec. 3th Sir Lancelot Barrington-Ward will address the society on the diagnosis and treatment of acute abdominal conditions in childhood.

Libraries in Hospitals

A meeting of the Guild of Hospital Librarians was held at St. Thomas's Hospital on Oct. 31st. Hospital libraries owe their origin to the war library started by Sir Hagberg Wright and Mrs. Gaskell in 1914 for the supply of books to the sick and wounded and the Red Cross is continuing the work. Dame Rachel Crowdy, vice-president of the guild, appealed for more books and more trained librarians. It is hoped to hold the second annual general meeting of the guild in Paris next year.

New Hospital at Hereford

The Herefordshire public assistance committee on Oct. 30th adopted a scheme for the erection at Hereford of a hospital which will provide wards for the sick to replace the accommodation at the poor-law institution, suitable maternity wards, accommodation for advanced cases of tuberculosis, and a new venereal clinic. The annual maintenance is estimated at £1200, and the scheme will cost in all £54,000.

Lectures on Child Health

A second series of ten weekly lectures has been arranged by the Jewish Health Organisation, and will be given at 8.30 p.m. on Saturdays at the Whitechapel Art Gallery, High-street, London, E., from Nov. 23rd to Jan. 25th. Dame Louise McIlroy will deliver the opening lecture on antenatal care, and other speakers will be: Dr. R. C. Jewesbury (care of the infant in the first two years of life), Dr. Bernard Myers (physical and mental welfare of the pre-school child), Dr. M. D. Eder (care of the child in relation to his studies), Dr. H. Harris (play in childhood), Mrs. Susan Isaacs, D.Sc. (mental welfare of the child), Mrs. Winifred Raphael (welfare of the worker), Prof. V. H. Mottram (domestic hygiene), Mr. Phineas Quass (protection of the worker), and Prof. Samson Wright (care of the adolescent). The lectures are open to all and no tickets are needed.

The Rogers Prize

An award of this prize will be made next year and candidates are invited to submit essays on the treatment of the sick poor of this country, and the preservation of the health of the poor in this country, or either of these subjects. Further particulars will be found in our advertisement columns.

Appointments

CARTER, HAROLD, M.B., F.R.C.S. Edin., M.C.O.G., has been appointed Medical Superintendent of the Central Middlesex County Hospital.

DENNY-BROWN, D. E., M.B. N.Z., M.R.C.P. Lond., Assistant Neurologist to St. Bartholomew's Hospital, London.

JONES, N. ROBYN, M.B. Camb., F.R.C.S. Edin., Assistant Orthopaedic Surgeon to the Prince of Wales' Orthopaedic Hospital, Cardiff.

LEWIS, EMLYNE, F.R.C.S. Eng., Resident Surgical Officer at the Hospital for Consumption, Brompton.

THOMAS, H. A., M.B. Liverp., D.P.H., Medical Officer of Health for the County of Debnish.

Gordon Hospital, Faulkhill Bridge-road, S.W.—The following appointments are announced:

HUTCHINSON, MAURICE, M.B. Lond., Hon. Anaesthetist;

JOHNSON, E. F., M.B. Lond., Hon. Anaesthetist; and

MORRIS, L. H., M.R.C.S. Eng., Hon. Anaesthetist.

Certifying Surgeons under the Factory and Workshop Acts: Dr. A. MACKINTOSH (Sunderland District, Durham); Dr. F. WIGGLESWORTH (Howden District, County of York East Riding).

Births, Marriages, and Deaths

BIRTHS

ANDERSON.—On Nov. 5th, at Homsey, the wife of Roy S. Anderson, M.R.C.S. Eng., of a son.

BARTLETT.—On Nov. 9th, at Saffron Walden, to Elsie, wife of Dr. Justinian Bartlett—a son.

BATCHELOR.—On Nov. 4th, at Putney Hospital, to Marjorie (née Radkin), wife of J. S. Batchelor, F.R.C.S. Eng.—a daughter.

COPEMAN.—On Nov. 7th, at Devonshire-place, W., the wife of Dr. William S. C. Copeman, of Ferncroft-avenue, N.W., of a daughter.

FRANKLYN.—On Oct. 31st, at Bradford, the wife of Dr. Harold Franklyn, of a son.

GOLDEN.—On Nov. 4th, the wife of Gerald N. Golden, F.R.C.S. Eng., of Haslemere, Surrey, of a son.

SATCHWELL.—On Nov. 4th, at North Curry, Somerset, Bristol, the wife of R. E. Satchwell, M.B., of a son.

SINGER.—On Nov. 2nd, at Greenhithe, Kent, the wife of Major E. O. A. Singer, R.A.M.C., of a daughter.

WIGFIELD.—On Nov. 5th, at Buntingford, Herts, the wife of Alan Wigfield, M.B. Lond., of a son.

MARRIAGES

CARR—CHRISTOPHERSON.—On Nov. 8th, at the Parish Church, Reigate, Claude Morris Carr, M.B. Camb., of Reigate, to Audrey Lorna Clifford, second daughter of Mr. and Mrs. Dudley Clifford Christopherson, Reigate Hill.

LEECH-WILKINSON—KINGDON.—On Nov. 4th, at Chelsea Parish Church, Arthur Leech-Wilkinson, B.M. Oxon., F.R.C.S. Edin., 11, The Circus, Bath, to Joan Kingdon, younger daughter of the late Mr. F. W. Kingdon and Mrs. Kingdon.

THOMPSON—STENHOUSE.—On Nov. 2nd, at West Lulworth, Dorset, Geoffrey Thompson, M.D., to Ursula Stenhouse.

GOLDEN WEDDING

TAIT—GREENWAY.—On Nov. 12th, at St. Andrew's Church, Plymouth, by the Rev. Preb. Wilkinson, D.D., and the Rev. B. Liptrott, M.A., William Tait, M.B. Edin., R.N., H.M.S. Cambridge, youngest son of the late George Tait, of Kirkcubright, Allowick, to Emma, eldest daughter of John Greenway, of Shaftesbury Villas, Ford Park, Plymouth. Present address: Kirkcubright, Alverstoke, Hants.

DEATHS

COATES.—On Nov. 1st, in London, after an operation, George Coates, D.M. Oxon., of South Kilworth, Rugby and Borden, Italy, aged 84.

CRESSY.—On Nov. 8th, at New Milton, Hants, Charles James Cressy, M.R.C.S. Eng.

LITGOW.—On Nov. 7th, at Farnborough, Hants, Thomas George Litgow, F.R.C.S. Edin., aged 82.

TEMPLETON.—On Nov. 2nd, at Bexhill-on-Sea, Percy Templeton, M.R.C.S. Eng.

WHITWELL.—On Nov. 3rd, at Church Stretton, George Graves Whitwell, M.B. Edin., late of Shrewsbury.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 19th.

General Meeting of Fellows. 5.30 P.M. Ballot for election to the fellowship.

Pathology. 8.15 P.M. (Group and Central Histological Laboratories at Archway Hospital (L.C.C.), Archway-road, N.). E. N. Allott: 1. Alkalosis in the Treatment of Gastric Ulcer. J. M. Alston: 2. Human Cases of Infection with an Organism resembling *B. necrophorus*. 3. Skin Reactions Produced by *Pneumococcus* Polysaccharide. W. G. Barnard and R. F. L. Hewlett: 4. Agranulocytosis. A. B. Bratton: 5. Anuria with Haemoglobin Casts in Kidneys following Abortion. 6. Dissecting Aneurysms of Aorta at 14 and 32 years. 7. Carcinoid Tumour of Small Intestine Associated with Carcinoma of Colon. H. C. Brown and J. M. Alston: 8. Demonstration of Antibodies to *L. icterohæmorrhagiae* in Human Serum. G. W. Goodhart and R. F. L. Hewlett: 9. Three Cases of Monocytic Leukæmia. 10. Case of Myeloblastic Leukæmia. 11. Case of Congenital Malaria. E. Hardy: 12. An Infection of Guinea-pigs due to *Bact. aertrycke*. L. F. Hewitt: 13. Electrode Potentials. J. E. McCartney: 14. Screw-capped Bottles for Culture Media. 15. Intravenous Solutions and a Simplified Method for their Administration. W. Mair: 16. Varieties of *C. diphtherie*. A. B. Rosher: 17. The Carrier Rate of Haemophilic Bacteria in the Trachea of Post-mortem Subjects correlated with the Influenza Death-rate during the last seven years. 18. The Use of Chocolate-tellurite Medium for the Diagnosis of Diphtheria. A. B. Rosher and E. Hardy: 19. The Persistence of Agglutinins in the Blood of Inoculated Subjects in Relation to the Serological Diagnosis of Enteric. E. W. Todd: 20. Antistreptolysin Titrations.

THURSDAY.

Dermatology. 5 P.M. (Cases at 4 P.M.) Dr. H. W. Barber: 1. Schamberg's Progressive Pigmentary Dermatoses. 2. Pigmentation of the Leg Secondary to Varicose Veins. Dr. C. H. Whittle: 3. Schaumann's Disease. 4. Pemphigus Vulgaris. 5. Carcinomatosis of the Skin. Dr. Elizabeth Hunt: 6. Xanthoma Tuberosum Multiplex.

Neurology. 8.30 P.M. Prof. E. D. Adrian, F.R.S.: Electrical Activity of the Cortex. Mr. J. H. Quastel, D.Sc.: Enzymic Activity of the Brain.

FRIDAY.

Disease in Children. 5 P.M. (Cases at 4.30 P.M.) Dr. P. Evans (for Dr. W. Sheldon): 1. Portal Cirrhosis. 2. Biliary Cirrhosis. Dr. G. H. News: 3. Infantile with Complete Hypospadias. Dr. R. Wilson (for Dr. D. Paterson): 4. Actinomycosis of the Lungs. Mr. R. M. Walker: 5. Total Pulmonectomy for Bronchiectasis. Dr. Maycock (for Dr. D. Paterson): 6. Late Rickets.

PADDINGTON MEDICAL SOCIETY.

FRIDAY, Nov. 22nd.—3.30 P.M. Visit to the Metropolitan Police Laboratory, Hendon.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

FRIDAY, Nov. 22nd.—2.30 P.M. (11, Chandos-street, W.). Dr. C. P. Blacker: Discussion on the Report of the Departmental Committee on Sterilisation. Other speakers: Dr. D. Blair, Dr. W. A. Potts, Dr. P. K. McCowan, Dr. D. McRae, Dr. W. J. T. Kimber, and Dr. T. Power.

HUNTERIAN SOCIETY.

MONDAY, Nov. 18th.—9 P.M. (Cutlers' Hall, Warwick-lane, E.C.4). The Bishop of St. Albans, Dr. C. P. Blacker, Dr. Halliday Sutherland, and Mr. E. R. T. Clarkson: That Birth Control is unnecessary in Modern Life.

EUGENICS SOCIETY.

TUESDAY, Nov. 19th.—5.15 P.M., rooms of the Linnean Society, Burlington House, Piccadilly, W. Mr. J. V. Quilliam, Mrs. C. B. S. Hodson, and Dr. C. P. Blacker: Voluntary Sterilisation—the Work of the last two years.

ROYAL SOCIETY OF TROPICAL MEDICINE AND

HYGIENE, Manson House, 26, Portland-place, W.

THURSDAY, Nov. 21st.—8.15 P.M., Dr. Eric de Verteuil and Prof. F. W. Ulrich: The Study and Control of Paralytic Rabies transmitted by Bats in Trinidad.

TUBERCULOSIS ASSOCIATION.

FRIDAY, Nov. 22nd.—5.15 P.M. (Manson House, 26, Portland-place, W.). Sir St. Clair Thomson: Tuberculosis of the Upper Respiratory Tract. Mr. R. E. Bickerton: Tuberculosis of the Eye. 8.30 P.M. Dr. E. L. Middleton and Dr. P. Heffernan: Industrialism and Tuberculosis.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

VICTOR HORSLEY LECTURE.

TUESDAY, Nov. 19th.—5 P.M. (University College Hospital Medical School, Gower-street, W.C.), Sir Walter Langdon-Brown: Integration of the Endocrine System.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE

MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

MONDAY, Nov. 18th, to SATURDAY, Nov. 23rd.—INFANTS HOSPITAL, Vincent-square, S.W. Mond., Wed., and Fri., 8 P.M. Course in anatomy and physiology for the F.R.C.S. (Primary).—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. All-day course in medicine, surgery, and gynaecology.—LONDON LOCK HOSPITAL,

91, Dean-street, W. Daily, 3 P.M. and 6 P.M., course in venereal disease.—Courses are open only to members of the fellowship.

HOSPITAL FOR SICK CHILDREN, Great Ormond-st., W.C. MONDAY, Nov. 18th, and TUESDAY.—2.30 P.M., Dr. David Nabarro: Diagnosis of Congenital Syphilis for School Medical Officers.

THURSDAY.—2 P.M., Dr. E. A. Cockayne: Fever of Obscure Origin. 3 P.M., Dr. W. Payne: Diabetes (IV.), Diabetes and the Ductless Glands.

Out-patient clinics daily at 10 A.M. and ward visits (except on Wednesdays) at 2 P.M.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Nov. 18th.—3.30 P.M., Dr. Symonds: Intracranial Pressure.

TUESDAY.—3.30 P.M., Dr. Critchley: Epilepsy and Allied Conditions.

WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. Walshe: The Motor System (II.).

FRIDAY.—3.30 P.M., Dr. Gordon Holmes: Disorders of Vision (I.).

Out-patient clinics daily at 2 P.M.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.

WEDNESDAY, Nov. 20th.—4 P.M., Dr. H. Courtney Gage: Radiology of the Genito-urinary Tract.

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.

THURSDAY, Nov. 21st.—9 P.M., Mr. John Everidge: Genito-urinary Tuberculosis.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Nov. 20th.—4.30 P.M., Mr. Jocelyn Swan: Tumours of the Bladder.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Nov. 18th.—10 A.M., Medical wards and skin clinic. 11 A.M., Surgical wards. 2 P.M., Surgical and gynaecological wards, eye, and gynaecological clinics. 4.15 P.M., Mr. Green-Armytage: Sterility Investigation.

TUESDAY.—10 A.M., Medical wards. 11 A.M., Surgical wards. 2 P.M., Throat clinic.

WEDNESDAY, 10 A.M.—Children's ward and clinic. 11 A.M., Medical wards. 2 P.M., Eye clinic. 4.15 P.M., Dr. R. W. Ironside: General Anæsthesia.

THURSDAY.—10 A.M., Neurological and gynaecological clinics. Noon, Fracture clinic. 2 P.M., Eye and genito-urinary clinics.

FRIDAY.—10 A.M., Skin clinic. 2 P.M., Throat clinic. 4.15 P.M., Mr. Neil Sinclair: Surgery of Goitre.

SATURDAY.—10 A.M., Medical wards, children's and surgical clinics.

The lectures at 4.15 P.M. are open to all medical practitioners without fee. Operations, medical and surgical clinics daily at 2 P.M.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Onseley-road, S.W.

WEDNESDAY, Nov. 20th.—4 P.M., Dr. J. W. McNee: Differential Diagnosis of Jaundice.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Nov. 20th.—3.30 P.M., Prof. John Eyre: Adolescence and Microbial Infections.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.

TUESDAY, Nov. 19th.—5 P.M., Dr. W. N. Goldsmith: Infantile Eczema and Papular Urticaria.

WEDNESDAY.—5 P.M., Dr. I. Muende: Histopathology of New Growths of the Skin.

CHADWICK PUBLIC LECTURE.

TUESDAY, Nov. 19th.—5.30 P.M. (London School of Hygiene, Keppel-street, W.C.), Prof. R. C. McLean: The Bacteriology of the Atmosphere.

UNIVERSITY OF SHEFFIELD.

FRIDAY, Nov. 22nd.—3 P.M. (Townrow): Ear, Nose (Royal Infirmary), Dr. F.

Clinic. Mr. A. B. Nutt:

SUNDAY.—10.30 A.M. (Royal Infirmary):

Medical Cases. 10.30 A.M. (Royal Infirmary):

A. E. Barnes: Medical Cases. Mr. W. J. Lytle:

Surgical Cases. 10.30 A.M. (Jessop Hospital), Mr. Glynn Davies: Gynaecological Cases.

GENERAL INFIRMARY, Leeds.

TUESDAY, Nov. 19th.—3.30 P.M., Mr. Chamberlain: Demonstration of Surgical Cases.

PUBLIC DISPENSARY, Leeds.

WEDNESDAY, Nov. 20th.—4 P.M., Dr. H. G. Garland: Headache—Common Causes and Treatment.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Nov. 21st.—4.15 P.M., Dr. A. Renshaw: Septicæmia.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE EAR, NOSE, THROAT AND CHEST, Hardman-street, Manchester, 3.

WEDNESDAY, Nov. 20th.—4.30 P.M., Mr. E. S. Burt Hamilton: Deafness.

ROYAL INFIRMARY, Manchester.

TUESDAY, Nov. 19th.—4.15 P.M., Dr. William Brockbank: Heart Disease in Schoolboys.

FRIDAY, Nov. 22nd.—4.15 P.M., Mr. Harry Platt: Demonstration of Orthopedic Cases.

ST. MARY'S HOSPITALS, Manchester.

THURSDAY, Nov. 21st.—4.15 P.M. (Whitworth-street West Hospital), Dr. Ward: Paralysis of Childhood.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

WEDNESDAY, Nov. 20th.—4.15 P.M. (Southern General Hospital), Dr. W. R. Snodgrass: Cardiovascular Diseases.

NOTES, COMMENTS, AND ABSTRACTS

KWASHIORKOR

A NUTRITIONAL DISEASE OF CHILDREN ASSOCIATED WITH A MAIZE DIET

BY CICELY D. WILLIAMS, B.M. Oxon., M.R.C.P.,
D.T.M. & H. Lond.

THE name "kwashiorkor" indicates the disease the deposed baby gets when the next one is born, and is the local name in the Gold Coast for a nutritional disease of children, associated with a maize diet, which was first described in December, 1933.¹ An attempt is here made to compare the disease with other conditions, and to indicate the differential diagnosis.

Kwashiorkor is usually observed between the ages of six months and four years, the youngest case noted being nine weeks and the eldest five years old. Some sixty cases have been observed in three years among patients at the Children's Hospital, Accra, the mortality being about 90 per cent. The history always includes defective feeding. The mother is sick, old, and malnourished, or has become pregnant again while the patient is still very young; or the mother may have died, breast-feeding being supplied by an unsuitable foster-mother, very often a senile grandmother; for among these African women some mammary secretion may be present in a woman who has not had a child for 20 years. Supplementary feeds consist mainly of a gruel made from partially fermented white maize, called *arkasa*, or, for older children, a thick dough of the same called *kenki* or *kon*. The child at first appears to progress normally. After a variable interval it ceases to gain weight and becomes

irritable. Some swelling of the hands and feet and face appears. This always passes off, both in the event of improvement and in the terminal stages of fatal cases. There may be attacks of diarrhoea; there may be photophobia; and there was sloughing of the cornea in two cases. The most obvious feature is the skin condition. Small, black, thickened, crumpled patches appear first about the knees and elbows, afterwards along the extensor sur-



FIG. 1.—A half-caste child, aged 5, suffering from kwashiorkor, with sores at the corners of the mouth.

faces and the buttocks. These are areas exposed to irritation and pressure. They have no relation to exposure to light, in contrast to the lesions of pellagra. The skin is soft and pliant, but tends to peel off, leaving a moist, raw surface. There is no "branny desquamation." Small sores at the corners of the eyes and mouth and about the vulva are usual. There may be a trace of albumin in the urine. Malaria, bronchitis, and worms are frequent complications; in uncomplicated cases there may be a slight irregular pyrexia. The blood count is little affected; there is no great anaemia and no leucocytosis. The W.R. is negative. Post mortem the only constant

finding is an extreme fatty infiltration of the liver.

Cases seen very early react well and promptly to an improved diet, rich in accessory substances. Nestlé's sweetened condensed milk with cod-liver oil and malt seemed to be the most successful line of treatment. Unfortunately the condition is an insidious one, and once the dermatitis has set in there is not much hope of recovery. Butter, eggs, tomato, orange, liver, Marmite, yeast, Bemax, iron, and arsenic have also been tried in the treatment.

Figs. 1 and 2 show the condition in a half-caste child of five who died two months later. It is just possible to see the sores at the corners of the mouth. The dark thickened patches of skin are seen on the legs and buttocks. There are none in the areas typical of pellagra. The microphotographs are of the liver (Fig. 3) and of a section of skin (Fig. 4) from the same case. Some points in the differential diagnosis between kwashiorkor and pink disease, vitamin-A deficiency, pellagra, and vitamin-C deficiency are set out below.

DIFFERENTIAL
DIAGNOSIS*Pink disease.*—

Characteristics common to pink disease and kwashiorkor, both of which occur in young children, are irritability, irregular pyrexia, and skin lesions. The latter reacts well to early treatment, whereas the former runs a prolonged course, unaffected by treatment. In kwashiorkor photophobia is seen only occasionally, skin lesions are distinct and typical, and desquamation is extensive, deep, and severe; whereas in pink disease photophobia is pronounced, skin lesions are different, and desquamation is slight.²

Vitamin-A deficiency.—Characteristics common to both kwashiorkor and vitamin-A deficiency are the lack of animal fats in the diet, the occurrence of skin lesions, attacks of enteritis, and improvement under cod-liver oil. Phrynodema, Bitot's spots, night-blindness, and xerophthalmia, often described in connexion with vitamin-A deficiency, occur in other members of the same population, but have not been observed in kwashiorkor, nor does the liability to skin infections appear to be increased.³⁻¹⁰

Vitamin-A and -B deficiency of Sierra Leone has in common with kwashiorkor stomatitis, conjunctivitis, and skin lesions, but it occurs in adults; many cases show eversion of the eyelids, and the desquamation is relatively slight.^{11, 12}

Vitamin-B deficiencies.—The differential diagnosis from beri-beri, which also causes oedema and affects children and infants, is that beri-beri, unlike kwashiorkor, may lead to sudden death in infants; may be very acute in onset; causes polyneuritis; and produces no skin lesions.¹³ Moreover beri-beri responds to treatment in hours instead of in weeks.

Vitamin-B₂ deficiency differs from kwashiorkor in that the diet leading to the condition contains

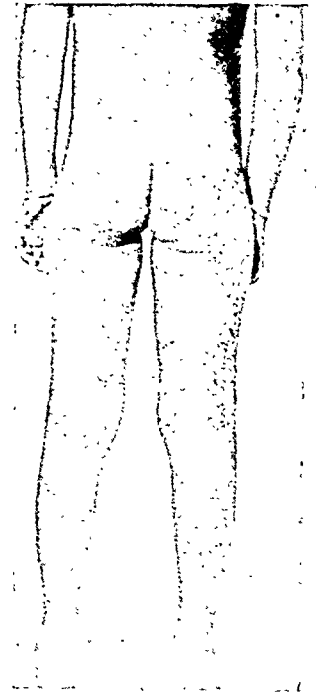


FIG. 2.—Dark thickened patches of skin on the legs and buttocks of the same child.

no milk or yeast, whereas the diet of the children described above usually includes milk, though its quality is probably defective; and arkasa and kenki do contain yeasts, which have not, however, yet been cultured or tested for biological value.^{14 15}

Other deficiencies.—Kwashiorkor cannot be due to deficiency of vitamin C or vitamin D, because the victims show no evidence of either scurvy or rickets. No tests for mineral or protein deficiencies have yet been made.

Pellagra has in common with kwashiorkor the occurrence of cedema, sores at corners of mouth and

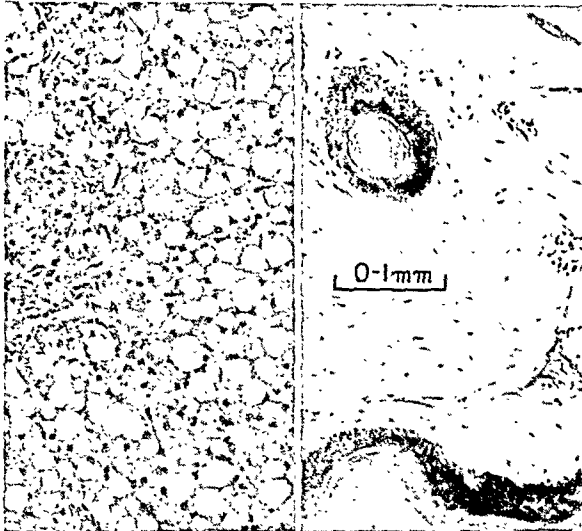


FIG. 3.—Photomicrograph of the liver showing extreme fatty infiltration.

FIG. 4.—Photomicrograph of the skin.

eyes, skin lesions, irritability, and an association with maize diet and with diet poor in protein. The differences are set out below in tabular form.

Differences between Kwashiorkor and Pellagra

KWASHIORKOR	PELLAGRA ^{16, 17}
Affected skin black, rugose, and soft.	Affected skin rough, dry, and branny.
Extensor surfaces and points of irritation and pressure affected.	Face, neck, and area, and dorsum of hands and feet affected.
Skin not photosensitive.	Skin photosensitive.
Occurs in children under five years.	Rare in children.
Usual under two years.	Almost unknown under two years.
Reflexes unchanged.	Peripheral neuritis common.
Dementia not observed.	Dementia common.
Patients may be largely on a breast milk diet.	Very rare with milk diet.
Arkasa (preparation of maize) in diet contains yeasts.	Yeasts said to be curative.
Fatty infiltration of liver severe and constant.	Fatty infiltration of liver may be present, but is generally mild.
Never seen in adults.	Common in adults.
Common condition in the Gold Coast.	Never yet described in the Gold Coast.

It has been suggested that kwashiorkor is in fact pellagra,¹⁸ but the points of difference appear to be more numerous and more striking than the points of similarity. The series of cases seen in East Africa by Dr. R. U. Gillan present apparently many points of resemblance to those described above³¹ and a perfectly typical case of kwashiorkor has been described by Dr. Dyce Sharp in Cape Coast.³²

I am indebted to the director of medical and sanitary services for permission to publish this article.

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(Continued at foot of next column)

SKELETAL REMAINS OF BISHOP JAMES KENNEDY

STRUCTURAL alterations at the University of St. Andrews in 1930 provided an opportunity for an almost complete anthropometric examination of the remains of Bishop James Kennedy, "the most eminent man in Scotland" in the first half of the fifteenth century. Kennedy was of royal descent, his mother being James I. of Scotland's elder sister, whose second husband was Sir James Kennedy. He took an active part in the development of St. Andrews University founded in A.D. 1411 under a Papal Bull, and was appointed one of the regents of the kingdom during the minority of James III. He was a great churchman and statesman, and was thought to have been the means of preserving the Stuart dynasty on the throne. In 1465 he was buried in St. Salvator's Chapel and when the tomb was opened in 1930 a massive casket of dark oak, engraved "Jacobi Kennedy" fell apart owing to dry rot, and the skeleton lay exposed. Prof. David Waterston was invited to examine the bones during the restoration of the tomb and describes his findings (*Trans. Roy. Soc. Edin.*, 1935, lviii., 75).

No evidence of senile changes were seen in the skull or jaws. The limb bones indicate a man 5 ft. 8 in. in height, whose shoulders had been broad with powerfully developed muscles. The areas of attachment of the pronator quadratus on the left ulna was better developed than on the right, the difference being due to a special movement such as fencing. That he was probably a horseman is indicated by an excessive bone formation on the medial surface of the femora. An old oblique fracture is apparent in the right clavicle caused by indirect violence and sustained within the last few years of his life; there is an excess of callus but the fragments are in a position creditable to the surgeon of the day. For some years before his death he had suffered from chronic ill-health; the thoracic vertebrae are the seat of ossifying spondylitis, the sixth to the twelfth being fused together owing probably to some chronic pulmonary affection; there are also signs of a slight arthritis of the hip-joints.

The endocranial cast shows exceptional development of the areas of Broca and Wernicke, which are

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associated with the power of speech. The brain in general was large and highly developed and falls into the "brachycerebral" group. The form of the skull is distinctive, low and wide in the frontal region, and high and wide in the occipital. The face is long, cheek bones prominent, and the nose is high-bridged, these features being shown in drawings reproduced in Prof. Waterston's paper. In measurement and in general form the skull is characteristically Scottish.

RADIOPHOBIA

WHEN X rays were first discovered there was very natural enthusiasm for experiment on their application to diagnosis and treatment. Then came a period of growing caution inspired by accidents and unexpected sequelae; and now again there are signs of a bolder outlook. But if our attitude is nowadays changing the change has by no means gone far enough for Dr. Foveau de Courmelles who inveighs against alarmist teaching (*Jour. de méd. de Paris*, 1935, xli., 889). He has the temerity to ascribe the whole scare to the non-medical radiographer who, he declares, came into the radiological department like a wolf into the fold and raised agitating cries about mysterious effects due to radiations from a distance. De Courmelles does not actually deny the damaging potentialities of rays directly encountered from near at hand, but he says that a very real and new disease—radiophobia—has been created by those who believe in influences felt yards away and through walls and ceilings. He suggests satirically that it is time we all started worrying about the effects of wireless rays, cosmic rays, and many other radiations which are now known to surround us from sun, earth, and stars. Certainly every alienist knows that the introduction of X rays has been a godsend to the deluded and paranoid patient who wants to explain abnormal sensations to his own satisfaction. Nevertheless, whatever de Courmelles may say, most radiologists will continue to feel that their speciality is no place for the foolhardy or careless worker.

CLANDESTINE DRUG TRAFFIC

RECENT meetings of the Council and the Assembly of the League of Nations have made it clear that, in spite of the complicated organisation which has been set up, there is no decrease in the amount of the illicit traffic derived from clandestine manufacturing. This "very real menace to the world" it was resolved must be met by "an intensified international campaign." In the first place it was recognised that a universal application of the existing convention is indispensable to final success, and in the second place yet another convention is required which shall be directed to the suppression of illicit traffic. It is hoped that an international conference will be convened next year to consider a scheme, already in draft, which is intended "to coördinate the various forces, international and national, whose task it is to put an end to the illicit traffic." The lack of universality of international coöperation is shown by the fact that Soviet Russia, the Argentine, Paraguay, Saudi Arabia, and Ethiopia are not parties to any of the three Opium Conventions. The Limitation Convention of 1931 also lacks the adhesion of Albania, Denmark, Finland, Iceland, Latvia, Liechtenstein, Luxembourg, Yugoslavia, Bolivia, Liberia, and the Union of South Africa. In addition to the foregoing the Geneva Convention of 1925 has not been ratified by China, Iran, the United States, Guatemala, Haiti, Mexico, Nicaragua, Panama, Peru, and Afghanistan. Even some Governments which are parties to some of the conventions are lax in effectuating them or, as in the case of a majority of the Latin-American countries, fail to supply annual reports to the secretariat of the League.

In May, 1933, at its seventy-third session the Council of the League instructed the secretariat to communicate to governments, for a first consultation,

draft articles prepared by the advisory committee as suitable for inclusion in an international convention. The replies which have been received were utilised for preparing an annotated draft for second consultation of the governments concerned. Out of 45 governments which have submitted observations 33 are in favour of the draft convention. The matter, after examination by a committee of experts, will again be brought before the Council.

There remains the not less important question, which has been for some years now before the advisory committee—namely, the limitation of production of raw opium and the coca leaf. It is now recognised that "clandestine manufacture depends on the liberal supply of raw materials" and that such limitation "if effectively applied would be a valuable step towards the final suppression of illicit traffic and drug addiction."

BRITISH AMBULANCE SERVICE IN ETHIOPIA

THE first unit of this service, consisting of four doctors, five orderlies, and transport personnel, will sail under the auspices of the British Red Cross Society next Saturday, Nov. 16th, by the *Sudan* and the *Rampura* for Berbera, where it will be joined by 24 trained African dressers recruited from Kenya and Uganda. This unit will proceed to the Ogaden war zone. Its members are Mr. John Melly, F.R.C.S. Edin. (principal medical officer), Dr. Arne Barkhuus, Dr. C. E. Bevan, and Dr. J. W. S. Macfie. A few days later the British Red Cross Society will send a small unit of two doctors and transport officers with medical stores via the Sudan to the northern war zone, which is at present entirely without medical aid. This second unit is being sent at the express request of the Emperor, and will be reinforced later. The appeals for funds for Red Cross help for Abyssinia have met with an immediate response, and the donations amount to about £22,000. But a total of at least £35,000 is needed and lack of money has prevented the equipment of the present unit with the X ray apparatus considered necessary. Further contributions, therefore, are urgently required, and they may be sent to Sir Arthur Stanley, British Red Cross Society, 14, Grosvenor-crescent, London, S.W.1.

GALL-STONE OBSTRUCTION IN THE INTESTINE

THE way in which an obstructing gall-stone has entered the lumen of the bowel must often remain doubtful, for it is usually considered wise to restrict exploration, and not to examine too carefully the gall-bladder and its surroundings. Rarely an opportunity arises of examining a case which throws light on the process of fistula-formation between biliary and intestinal tracts. In the October issue of the *British Journal of Surgery* Mr. C. P. G. Wakeley and Mr. F. W. Willway describe the findings of an autopsy in which a gall-stone measuring $\frac{3}{4}$ in. by $\frac{1}{2}$ in.—i.e., of a size which they consider might cause intestinal obstruction—was on the point of ulcerating through from the common bile-duct to the duodenum. The stone was tightly impacted in the ampulla of Vater and the ulceration was beginning just above the opening on the papilla. Passage through the papilla itself of a stone large enough to cause intestinal obstruction would seem to be impossible, and it is probable that the most usual method of entry into the duodenum is through a fistula between the fundus of the gall-bladder and the duodenum. Wakeley and Willway point out that there is a good chance that such a fistulous opening does not close completely afterwards, and that it is therefore dangerous to perform cholecystectomy on a patient who has recovered from gall-stone obstruction of the intestine. They also think it important that the surgeon operating on a case of obstruction by gall-stone should be alert to the possibility of double obstruction. They have examined stones which have appeared to be on the point of breaking into two; they actually met

with a case of double obstruction, one stone being lodged in the rectum, and the other in the ileum. The two stones fitted neatly together. A facet on a stone removed should at once raise the question in the surgeon's mind as to whether another stone is present. The site of impaction seems to be fairly constantly in the ileum, most often in the lower ileum. Wakeley and Willway found the stone in the lower ileum in 7 cases, and in the middle ileum in 2 cases, while the site was in other parts of the intestine in four instances only. All their 11 patients (one with double obstruction) were operated on, with the low mortality figure of 3 deaths out of 11 cases. A correct preoperative diagnosis was made in 2 cases only. The possibility of dislodging the stone, and of shifting it either up or down to a healthier site for removal, is discussed. They found dislodgement possible in 6 cases; in 2 they were able to push the stone on, and in 4 they pushed it back. It was then possible to open the bowel at a part where healing could be confidently expected.

THE VICTIMS OF X RAYS

THE year 1935 is the fortieth anniversary of the discovery of X rays, and a notice in the November issue of the *British Journal of Radiology* states that it is proposed to publish in *Strahlentherapie* a memorial to all the X ray workers who have died as a result of devotion to their calling. Radiologists who have been personally associated with these men and women are asked to send brief accounts of their lives and deaths (about two type-written pages) and a photograph to the editor of *Strahlentherapie*, Prof. Hans Meyer, Parkallee 73, Bremen, Germany.

Vacancies

For further information refer to the advertisement columns

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.

Apothecaries' Hall, Water-lane, E.C.—Rogers Prize. £200.

Assam, India, Welsh Presbyterian Mission Hospital, Shillong.—

Surgeon.

Aylesbury, Royal Buckinghamshire County Hospital.—Hon.

Cons. Surgeon to Ophth. Dept.

Bethnal Green Hospital, Cambridge-road, E.—Asst. M.O. £250.

Birmingham Maternity Hospital.—Hon. Obstet. Surgeon.

Birmingham General Hospital.—Res. Surg. O. £150.

Birmingham General Hospital.—Asst. Pathologist. £600. H.P. £200.

Bradford, Grassington Sanatorium.—Asst. Res. M.O. £175.

Brentwood, Essex, High Wood Hospital for Children.—Asst. M.O.

£250. Also H.P. At rate of £120.

Brighton Education Committee.—Asst. School M.O. and Asst.

M.O.H. £500.

Brighton, Royal Sussex County Hospital.—H.S. Also Cas. H.S.

£150 and £120 respectively.

Bristol General Hospital.—Sen. Res. M.O. £200.

British Postgraduate Medical School, Ducahe-road, W.—H.S.

(Obstetrics).

Buxton Clinic for Rheumatism and Allied Diseases.—H.P. At

rate of £150.

Cancer Hospital, Fulham-road, S.W.—Res. M.O. £200. Med.

Reg. £150. Also H.S. At rate of £100.

Carshalton, Surrey, Queen Mary's Hospital for Children.—H.P.

At rate of £120.

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S.

At rate of £100.

Chester Royal Infirmary.—H.S. £150.

Dreadnought Hospital, Greenwich, S.E.—H.P. and H.S. Each

at rate of £110.

Dublin, Mercer's Hospital.—Hon. Visiting Surgeon.

Durham County Hospital.—H.S. At rate of £150.

East Ham Memorial Hospital, Shrewsbury-road, E.—H.S. to

Special Depts. and Cas. O. At rate of £120.

East Sussex County Council.—M.O. for Cuckfield Institution.

£200. Also District M.O. for Cuckfield District. £120.

Edinburgh, Royal College of Physicians.—Kirk Duncanson

Research. £300.

Principal M.O.H. of Cairo. L.E. 840.

Serum and Vaccine Institute, Cairo.

L.E. 840-984.

Exelina Hospital for Sick Children, Southwark, S.E.—Anæsthe-

tist to Aural and Dental Depts. 50 guineas.

Golden-square Throat, Nose, and Ear Hospital, W.—H.S. £100.

County Hospital.—H.S. £150.

Jun. Res. M.O. £250.

With Park Hill, N.—Asst. M.O. £250.

n, Great Ormond-street, W.C.—Res.

Branch. At rate of £250. Res.

At rate of £150. Also Clin. Asst.

M.O. 1 guinea per visit.

Hospital for Women, Soho-square, W.—Res. M.O. At rate of

£100.

Huddersfield, St. Luke's Hospital.—Res. M.O. £200.

Ilford, King George Hospital.—Two H.P.'s and three H.S.'s.

Each at rate of £100.

Indian Medical Service.—Commissions.

Jersey General Hospital and Poor Law Infirmary.—Radiologist.

£300.

Jewish Maternity Hospital, Underwood-street, E.—Res. M.O.

At rate of £50.

Kirbymoorside, Yorkshire Children's Orthopaedic Hospital.—

H.S. At rate of £150.

Leyton Borough.—Part-time Orthoptic Worker. 7s. 6d. per

session.

Liverpool Hospital for Consumption and Diseases of Chest,

Mount Pleasant.—Hon. Asst. Physician.

Liverpool, Stanley Hospital.—H.S. At rate of £100.

L.C.C.—Asst. M.O.'s for Mental Hospital Service. Each £470.

London University.—Rogers Prize 1936. £100.

Manchester, Ancoats Hospital.—H.S. to Ear, Nose, and Throat

Dept. At rate of £100.

Manchester, Baguley Sanatorium.—Jun. Asst. M.O. £250.

Manchester, Crumpsall and Withington Hospital.—Res. Obstetric

Officers. Each at rate of £250.

Manchester Northern Hospital, Cheetham Hill-road.—Res. M.O.

£150.

Middlesex County Council.—Visiting Dental Surgeon. £2 2s.

per session.

Middlesex Hospital, W.—M.O. for Dept. of Radio-Therapy.

£1200.

Mill End Hospital, Bancroft-road, E.—Asst. M.O. £350.

Miller General Hospital, Greenwich-road, S.E.—Cas. O. At

rate of £150. Also H.P. and H.S. Each at rate of £100.

Newark General Hospital.—Res. H.S. £175.

Newcastle, Royal Gwent Hospital.—Asst. Cas. O. At rate of

£135.

Norwood Hospital for Children, Elder-road, S.E.—Asst. M.O.

£250.

Nottingham Children's Hospital.—Res. H.P. At rate of £150.

Nottingham City Hospital.—Res. Surg. O. £350. Also two

H.S.'s. Each at rate of £150.

Oswestry, Robert Jones and Agnes Hunt Orthopaedic Hospital.—

Res. Surg. O. £350.

Plumouth, Prince of Wales's Hospital, Greenbank-road.—H.S.

At rate of £120.

Poplar Hospital for Accidents, East India Dock-road, E.—

Second Res. O. £175.

Preston, Biddulph Grange Orthopaedic Hospital.—Jun. H.S. At

rate of £150.

Princess Elizabeth of York Hospital for Children, Shadwell, E.—

Res. M.O. £200. H.S. Also Cas. O. Each at rate of

£125.

Princess Louise Kensington Hospital for Children, St. Quintin-

avenue, W.—Clin. Asst. for Out-patients.

Queen Mary's Hospital for the East End, Stratford.—Res. M.O.

and 2 Cas. and Out-patient Officers. Each at rate of

£150. Also 2 H.S.'s, H.P., Obstet. H.S., also Res. Anæ-

sthetist and H.P. Each at rate of £120.

Rochester, St. Bartholomew's Hospital.—Res. Surg. O. At rate

of £225.

Royal Waterloo Hospital for Children and Women, Waterloo-

road, S.E.—H.S. At rate of £100. Also Hon. Clin. Asst.

St. Charles's Hospital, St. Charles-square, W.—Asst. M.O. £250.

St. George-in-the-East Hospital, Raine-street, E.—Asst. M.O.

£250.

St. Olave's Hospital, Lower-road, Rotherhithe, S.E.—Asst. M.O.

£250.

Salford, Infectious Diseases Hospital.—Jun. Asst. Res. M.O.

£200.

Salisbury General Infirmary.—Res. M.O. £250.

Salvation Army, Mothers' Hospital, Lower Clapton-road, E.—

Sen. Res. M.O. £150. Also Jun. Res. M.O. At rate

of £80.

Sheffield Royal Hospital.—Clin. Asst. to Ophth. Dept. £300.

Southampton, Royal South Hants and Southampton Hospital.—

Cas. O. Also H.S. to E.N.T. Dept. and Res. Anæ-

sthetist. Each at rate of £150.

South London Hospital for Women, Clapham Common, S.W.—

H.P. and two H.S.'s. Each at rate of £100. Also Anæ-

sthetist. 10s. 6d. per attendance.

Stafford, Standon Hall Orthopaedic Hospital.—H.S. £200.

Swansea General and Eye Hospital.—Res. Anæsthetist. £150.

Taigarth, Breconshire Mid-Wales Counties Mental Hospital.—

Asst. M.O. £400.

Watford and District Peace Memorial Hospital.—H.S. and H.P.

Each £150.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Jun.

Res. H.S. At rate of £100.

West London Hospital, Hammersmith-road, W.—Physician to

X Ray (Therapeutic) and Electrical Depts.

Winchester, Royal Hampshire County Hospital.—H.S. At rate

of £125.

Wokingham, Berks. Pinewood Sanatorium.—Asst. M.O. £250.

York County Hospital.—H.P. £150.

The Chief Inspector of Factories announces vacancies for
Certifying Factory Surgeons at Biggleswade (Bedford) and
Rochford (Essex).

NEW MATERNITY CLINIC AT DEPTFORD.—The
foundation-stone of a new maternity clinic at Dept-
ford, which it is hoped will centralise six of the
eight existing clinics, has been laid by the mayor. The
building will be in two blocks, with a sun balcony, a
gymnasium for massage and remedial exercises, and a
toddlers' playground.

ADDRESSES AND ORIGINAL ARTICLES

INTEGRATION OF THE ENDOCRINE SYSTEM*

By SIR WALTER LANGDON-BROWN, M.D. Camb.,
F.R.C.P. Lond.

EMERITUS PROFESSOR OF PHYSIC IN THE UNIVERSITY OF
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IN 1894 Horsley was awarded a medal by the Royal Society "for his investigations relating to the physiology of the nervous system, and of the thyroid gland." These were, of course, two separate lines of inquiry, but my purpose to-day is to show how much more closely these two subjects are related than was imagined at that time.

Recent Lines of Advance

Three recent lines of advance are leading to a clearer conception of the integration of the endocrine system.

1. The diencephalon (particularly the part we were taught to call the hypothalamus) has been conclusively shown to be the nervous structure concerned with the expression of the emotions.

2. The pituitary, which is so closely associated with the diencephalon, has become recognised as the leader of the endocrine orchestra.

3. It is now realised that all nervous impulses have a chemical mediator between the neuron and the tissue cell, and indeed between one neuron and another.

DIENTEPHALON AND THE EXPRESSION OF THE EMOTIONS

From the experiments of Sherrington it has been known that if the higher parts of the brain be severed from the diencephalon in a dog, the animal responds to ordinary stimuli in an exaggerated way by an explosion of what he terms "sham rage." Cushing has reported similar explosions in a patient suffering from a cerebral tumour which similarly destroyed these connexions. The ravages of lethargic encephalitis on this part of the brain have not only damaged the statics of the body but have profoundly affected the temperament and behaviour of the victim.

In these instances we are dealing with partial lesions which no doubt have an irritative effect on the remainder. But in an extraordinary case under the care of Prof. Naish,¹ of Sheffield, a teratoma involving the whole of hypothalamus completely blotted out the normal expression of the emotions; in Hughlings Jackson's nomenclature, a destroying rather than a discharging lesion.

A girl, aged 10, came under observation with the history of having been of an unusual temperament since birth. As an infant she used to sleep considerably longer hours than do most infants, and without moving. As she grew older it was noticed that she never showed joy, excitement, or fear, although she apparently felt fear, especially of loud noises, darkness, solitude, and certain persons. She would say she was afraid, but her expression and voice were calm. What was taken to be anger was shown by sudden refusal to comply with suggestions. She appeared to have strong feelings, but displayed none of the usual childish graces; her manners to chance callers were incorrigibly rude and she was very impenetrable

to suggestion. All her life she was liable to sudden rises of temperature followed shortly by sudden falls. Her mental powers were good and she had an excellent memory. Her balance was never very good; when she tripped she seemed to have less than the usual powers of recovery and would fall flat on the floor. Three years before her death it was noticed that she was drinking heavily and passing large quantities of pale urine by day and by night; her appetite for solid food was poor and she was wasting, and not growing at all. The polyuria continued till about five weeks before death and then ceased somewhat abruptly. There was no sugar in the urine. Her emotional reactions were further diminished; she never shed a tear. Some three or four weeks before her death she found herself unable to walk, surmised that she was going to die, and said in an indifferent tone "Well, we can't help it." She appeared to feel the cold intensely, and was apt to huddle in front of a big fire. This feeling of cold increased until some two or three weeks before death when it ceased abruptly. She began to fall asleep in unusual places. Her powers of vision were lost apparently quite rapidly about five weeks before her death.

On admission she was remarkably drowsy. The pupils were equal and reacted normally. No cranial nerve paralysis was found; the reflexes were normal. There was marked pallor of the central area of each optic disc. She became comatose and died a few days later.

At the post-mortem a firm tumour with a smooth lobulated surface was found projecting from the base of the brain in the hypothalamic region behind the optic chiasma. The body showed no other abnormality except for enlargement of the mesenteric glands with evidence of tuberculous infection. The pituitary gland appeared to be normal. Microscopically the tumour was a teratoma.

You will note that she had temporary symptoms presumably due to pituitary compression, such as polyuria, disturbances of temperature, and much drowsiness, but that the most striking feature was the blotting out of nearly all normal emotional expression.

My second point really contains two separate propositions.

ASSOCIATION BETWEEN THE DIENTEPHALON AND PITUITARY

The anatomist of the past, looking at the brain enclosed in bone, and joined by a narrow stalk to this small pituitary body also thus enclosed, like a brain in miniature, were struck with the idea of a little shrunken brain, which, as it were, responded to, or repeated, the actions of the big brain above. Modern research has shown that there is more in this idea than was supposed in the nineteenth century. Harvey Cushing gave a brilliant review in his Lister memorial lecture² of the relationship between this gland and the diencephalon lying immediately above it; he re-echoed the saying of Ridley in 1693 that "it seems in a manner almost impossible to treat of one independently of the other."

A clear-cut instance of inhibition of the secretion of pituitrin through emotional disturbance is provided by Leslie Pugh's observation on cows that refuse to yield their milk, either because the calf has been taken away or because they object to an individual dairyman. If she hears the blaring of the calf the mother may yield her milk, but either cause of her refusal can be overcome by an injection of pituitrin. The disturbance of her diencephalon inhibited the chemical stimulus to the expulsion of milk, but the injection of that stimulant cut under the nervous inhibition, and the milk had perforce to flow.

* Being the fifth Horsley memorial lecture (abbreviated), delivered at University College, London, on Nov. 19th, 1935. The full text of the lecture will be published later by the Cambridge University Press.

Diabetes insipidus has been referred by some observers to a hypothalamic lesion and by others to a pituitary one. It is generally admitted now that damage to either place or the stalk connecting them can have this effect. Since pitressin can reduce the secretion of water by a denervated kidney, it is clear that when a nerve lesion leads to polyuria it does so by interfering with the secretion of pitressin. Presumably nervous polyuria is a temporary functional condition of the same sort. Thus we may accept the view of a diencephalo-pituitary apparatus, in which the nervous apparatus can implement itself through the chemical secretions of the glandular portion. Moreover, as P. T. Herring has pointed out, this secretion may be diverted either into the hypothalamus or into the general circulation by a local vascular adjustment.

THE PITUITARY AS LEADER OF THE ENDOCRINE ORCHESTRA

Cushing some years ago laid down the principle that polyglandular syndromes had their primary focus in some pituitary disturbance. The close association between the pituitary and the other endocrine glands is now generally admitted. Facts have accumulated so rapidly, that in order to gain any clear impression of the present position it is necessary to be concise and rather dogmatic. We recognise three types of cell in the anterior pituitary: (1) the chromophobe which resists staining and is probably the parent cell of (2) the eosinophil, and (3) the basophil. An adenoma composed of chromophobe cells diminishes pituitary function. Fröhlich's syndrome of obesity of the limb-girdle type and genital hypoplasia was originally recognised in a case of this sort. But extreme obesity may also result merely from division of the pituitary stalk, either experimentally or by disease. Milder cases, occurring in the absence of an adenoma, may be attributed to a delay in the differentiation of chromophobe cells; puberty may be delayed but the outlook is not so serious. That the eosinophil cells are the source of a growth hormone can be definitely accepted. The experimental evidence as to the production of gigantism in rats, the clinical evidence derived from acromegaly and acromiery, and from Simmonds's disease both in children and in adults seem alike satisfactory, though Novak³ maintains that this hormone has not yet been obtained free from all the others. The basophil cells became regarded as the source of the sex hormone after the researches of Evans and Simpson, and still more so after Cushing's description of the syndrome of pituitary basophilism.⁴ We may accept the view that the growth and sex hormones are antagonistic, and that it is not until the latter gains the upper hand that puberty occurs, but as I hope to show later, there are strong reasons to doubt the basophil cells as the source of the sex hormone. The position with regard to gonadotropic hormones is involved. We must distinguish clearly between oestrogenic substances which can act directly in the absence of the ovaries and gonadotropic principles which act indirectly by exciting the production of oestrin in the ovary. The gonadotropic extracts in therapeutic use are obtained not from the pituitary but from the placenta or from pregnancy urine; their active principle is probably chorionic in origin. Although it is similar to, if not identical with the type which can be obtained by chemical treatment of the pituitary, there is an important difference in their physiological action. The one obtained from the pituitary can produce both maturation of the ovarian follicles and their subsequent

luteinisation in an animal deprived of its own pituitary, while the chorionic one cannot do either under such conditions (Collip⁵). The contrast between the small amount of oestrogenic substance produced by the pituitary and the enormous amount of oestrin found in the placenta, whence it overflows freely into the urine during pregnancy, is highly suggestive of a catalytic agent acting on a large mass of substrate, or at any rate of a stimulating synergic mechanism. In other words, while we must admit the prime importance of the anterior pituitary in initiating the events of the reproductive cycle, the process suggests that it does so by calling into activity hormones formed in the gonadal apparatus itself. This seems all the more probable in view of its capacity to evoke a response in male and female alike. More surprising is the fact that though the primary sex hormones are not identical, even though chemically closely related, descent of the testes in cryptorchids has been repeatedly observed after the injection of the extract from pregnancy urine.

It is still a matter of dispute whether the maturation and the luteinisation of an ovarian follicle are excited by two distinct hormones from the anterior pituitary or by only one, which produces these two effects according to the stage of the cycle. Most observers now, except Collip, seem to incline to the latter view, which would harmonise with the general conception I am advancing.

After the recognition of the growth and sex hormones, claims for other hormones secreted by the anterior pituitary multiplied rapidly. The principal ones are as follows:—

The thyrotropic hormone.—The loss of the secretion of the anterior pituitary through disease or experimental extirpation is followed by atrophy of the thyroid with reduction of the basal metabolic rate, and these changes can be prevented by injection of an anterior pituitary extract. Such an extract can produce hyperplasia of the thyroid with exophthalmos and an increased basal metabolic rate, but the two last named cannot be produced in animals from which the thyroid has been removed.⁶ We have here an experimental method of producing Graves's disease and as in Graves's disease the condition can be controlled by the administration of iodine. Such observations throw light on the emotional causation of hyperthyroidism. It has long been known that the thyroid has an abundant supply of sympathetic nerves, but as these appear to be purely vasomotor, and indeed vasoconstrictor in action, it was difficult to see how their stimulation could lead to thyroid hypertrophy. It is therefore tempting to attribute such enlargement to excessive production of the thyrotropic hormone in the pituitary under diencephalic stimulation. Harington, however, thinks that although the greatly increased rate of secretion by the gland in hyperthyroidism is probably due to some extrinsic stimulus and although the thyrotropic hormone has been shown to be such a potential cause, it is unlikely that anything so simple as the overproduction of this hormone can account for Graves's disease.

Parathyrotropic hormone.—The existence of this hormone has not yet been established, but the striking similarity of the decalcification and bone pains of pituitary basophilism and of hyperparathyroidism is suggestive, despite the fact that in the former the blood calcium is not increased as in the latter.

Diabetogenic hormone.—Houssay first found that if a dog is previously deprived of its pituitary, subsequent removal of its pancreas does not cause glycosuria. But if an anterior pituitary extract is injected the blood-sugar is raised and sugar appears in the urine. Houssay has recently obtained this blood-sugar raising principle from the urine and according to Wilder and Wilbur it acts by way of the adrenals on the liver. In this connexion it is of great interest that Hertz⁷ found symptoms of von Gierke's disease in a pituitary dwarf, suggesting that the

non-utilisation of glycogen characteristic of that condition is due to a lack of Houssay's pituitary hormone. We are now realising the complexity of the endocrine-autonomic mechanism by which the blood-sugar level is maintained; a balance being struck between the agencies tending to depress it—i.e., the pancreas under the influence of the vagus, and those tending to raise it, i.e., both lobes of the pituitary, the thyroid and the adrenals acting with the sympathetic, while mid-brain and bulbar centres regulate the whole. Just as cerebral anaemia leads to a rise of blood pressure through peripheral vasoconstriction, and as increased hydrogen-ion concentration in the medulla leads to increased respiratory effort, so a fall of blood-sugar brings into play the mechanisms which raise it again. Conversely the intravenous injection of hypertonic glucose may so stimulate the other side of the balance that actual hypoglycaemia may follow.

The fact that this Houssay hormone acts much more rapidly if injected into the cerebro-spinal fluid is regarded by Lucke as evidence that it acts through the nervous centres and then presumably via the splanchnics on the adrenals. This is not unlike the view expressed by J. J. R. Macleod in the Herter lectures shortly before his death. Funk and others noting the marked ketonuria which occurs both with Houssay's extract and in von Gierke's disease claim to have isolated a separate *ketogenic principle*, differing from that which raises blood-sugar because it increases the lipid content of the blood.

Lactogenic hormone.—It has long been recognised that the post-pituitary can influence the expulsion of milk from the mammary ducts, but it is now claimed that an anterior pituitary hormone, prolactin, stimulates the actual secretion, while oestrin is responsible for the unfolding of the mammary duct system.⁵

Adrenotropic hormone.—Here we are on rather securer ground. The close resemblance between pituitary and adrenal virilism, the fact that progeria was first referred to adrenal atrophy and now to atrophy of the pituitary, the association of anencephaly with incomplete development of the adrenals all point to some fairly close interaction. Experimentally injection of anterior pituitary extracts can produce marked adrenal hypertrophy. Among others, Broster and Vines and Lescher and Robb-Smith⁹ have emphasised the great difficulty of determining whether in a case of virilism the primary lesion is in the pituitary or the adrenal. Indeed in proved cases of a pituitary basophil adenoma such as Parkes Weber's the adrenals showed hypertrophy.

THE RÔLE OF THE BASOPHIL CELLS

We are now in a position to come to closer grips with the questions—what is the function of the basophil cells and can we draw any conclusions therefrom which will throw light on the way in which the pituitary does its work? We were a little too ready to conclude that the syndrome of pituitary basophilism confirmed the idea that the sex hormone originated in the basophil cells. Woollard¹⁰ was the first, as far as I am aware, to point out that if this were so, it would be unreasonable to suppose that in women virilism and decay of sexual function should follow excess of it. Injection of pituitary gonadotropic hormone produces nothing like pituitary basophilism, but may produce gonadal atrophy. Woollard envisages the basophil cells as the inhibitors of the acidophilic activities rather than as the source of the sex-hormone. He thinks that the pituitary plays no part in sexual differentiation, but brings testis or ovary to structural differentiation and full endocrine activity. Lescher and Robb-Smith come to a similar conclusion, that the basophil cells are the source of some depressive inhibitory substance. Levy Simpson¹¹ also suggests that the basophil secretion is inhibitory on the homosexual glands, allowing the development of a latent heterosexual rudiment. Wright has reported an excess of the pituitary sex hormone in the urine of female patients with basophilism; Levy Simpson thinks it is the

male sex hormone that is present. In any case clinical evidence of increased sexual activity in such patients is more than dubious.

Crooke¹² has described a characteristic hyaline change in the basophil cells in Cushing's syndrome, whether that syndrome be associated with basophilic adenoma or a neoplasm of the thymus or hyperplasia or a neoplasm of the adrenal cortex. He did not regard this as a degenerative change, but as an expression of altered physiological activity. In Addison's disease Crooke and Russell¹³ found an extreme reduction in the pituitary basophil cells. They think this may be the cause of the low blood pressure and possibly of the hypoglycaemia; it is certainly in sharp contrast with the high pressure and hyperglycaemia found with basophilic adenomas. These authors, together with Evans,¹⁴ have described two cases of such adenomas in which most of the characteristic symptoms of the syndrome were lacking, cardiovascular hypertrophy being the salient feature. Nevertheless, they are not prepared to go as far as Cushing in regarding essential hypertension as due to increase in the number of basophil cells. Broster and Vines regard an excess of fuchsin-staining material as the essential change in the adrenal cortical cells which produces virilism. This change may be absent in pituitary basophilism. The way in which a growth in the thymus gland, usually regarded as antagonistic to sexual development, may stimulate the basophilic syndrome adds to all these doubts concerning the sexual functions of the basophil cells.

In earlier days the number of "centres" located by the physiologist in the medulla around the fourth ventricle multiplied until they produced a revolt against the whole conception. That centres should exist ready-made for a contingency which might never arise throughout life was a *reductio ad absurdum*. In the same way the functions controlled by the anterior pituitary have multiplied until the existence of a separate hormone for each function has become almost incredible. It seems more probable that the somewhat violent chemical measures adopted to isolate these pituitary hormones even in only an approximately pure state have produced alterations in the basic products, as P. E. Smith⁸ suggests. In the less complicated case of the thyroid Harington¹⁵ believes that the molecule of the complete active secretion contains both thyroxine and diiodotyrosine, and that some linkage between them is ruptured during the hydrolysis necessary for the isolation of thyroxine. Surely something of the same sort is probable in the case of the pituitary. Thus its thyrotropic hormone is obtained by acid extraction, which may easily produce changes in chemical structure.

In view of these facts, this newer conception of the anterior pituitary producing an accelerating hormone in the eosinophil cells and an inhibitory one in the basophil cells seems a rational one—the functions and the staining reactions of these cells being alike diametrically opposed. One may regard the anterior pituitary as largely controlled by the diencephalon and putting down the loud or soft pedal, as it were, on the other glands.

Fresh light on the whole subject has been thrown by Dodds¹⁶ who classifies hormones under two headings. The first are complex protein bodies formed by the anterior pituitary, which act on the other endocrine glands, causing them to form the secondary type of hormones which are bodies of comparatively small molecular weight, most of which have been isolated in a crystalline form and some of

which have actually been prepared synthetically. It will be noted that in this respect the posterior pituitary belongs to the second group.

In conjunction with Cook, Dodds has carried out a brilliant series of researches into these secondary hormones and has shown that simpler compounds than those prepared by the body can have the same biological effect to a less or even greater extent. This basal group with the simplest chemical structure that can produce the biological effect he calls the "skeleton key" which picks the physiological lock. Even more striking was his demonstration that the same basal group could produce more than one biological effect. To such groups he gave the name of "pass keys." Perhaps the most impressive instance of this is the condensation of benzene rings into a phenanthrene ring, which by simple alteration in the degree of hydrogenation can give rise to œstrin, to vitamin D or calciferol, and to the carcinogenetic substance present in coal tar.

It is accordingly by no means fanciful to regard the anterior pituitary as receiving the impulses from the diencephalon, and producing an activating and an inhibitory hormone of a protein character according to demand, which can speed up or inhibit the secretion of the simpler grade of hormone in the other endocrine glands. At any rate it is a unifying hypothesis which deserves further and careful consideration.

ANTIHORMONES

The question has not been simplified by the claims made for the existence of antihormones. Collip showed some time ago that parathormone gradually lost its effect on repeated injections. One might imagine that this failure could be adequately accounted for by its destructive action on the calcium content of bone and muscle, but he¹⁷ now thinks that there is an antihormone both to the pituitary growth and the thyrotropic hormones, and advances the hypothesis that the production of antihormones may be responsible for hypoglandular states. He regards a hormone-antihormone linkage as the normal condition, which can readily be disturbed. The purposive character of such antihormones is hard to see; certainly thyroid administration is effective when continued over many years. The claim for the existence of a catechin in the blood which is antagonistic to thyroxine, if substantiated, suggests a simpler explanation—namely, that various chemical substances can destroy hormones, just as we know the acetylcholine and adrenaline set free on nerve stimulation are rapidly destroyed in the blood or tissue cells.

A CHEMICAL MEDIATOR BETWEEN NEURON AND TISSUE CELL

And this leads me directly to my third point. It has long been common knowledge that emotional states may modify secretion; the tears of sorrow and the dry mouth of fear are proverbial. In such instances it is obvious that a nervous impulse has produced or prevented a chemical process. But it is only quite recently that we have realised that all nervous impulses have a chemical mediator between the neuron and the tissue cell, and indeed between one neuron and another. In Hopkins's phrase, chemical substances are produced which translate for the tissues the messages received by nerves. We have indeed been curiously blind to the fact that the chemical changes produced in a gland by nervous stimulation is only a special case of a general law. I say curiously blind, because this century had only just begun when Langley found a clue which was not really followed up for years. We knew that adrenaline

is manufactured by the cells of the adrenal medulla, which are actually formed out of sympathetic ganglion cells. Langley enunciated the law that the effect of adrenaline on any part is the same as if the sympathetic nerves to that part were stimulated; an extraordinarily interesting example of a chemical substance imitating a nervous response. The adrenal medulla was seen to represent the post-ganglionic element in the sympathetic. In 1907 W. E. Dixon made some tentative experiments on the liberation of a chemical substance in the heart after vagus stimulation; unfortunately this encountered so much scepticism that he dropped the subject. But later the work of Loewi and of Dale has proved that acetylcholine is liberated at the terminals whenever sympathetic or parasympathetic pre-ganglionic fibres are stimulated, and adrenaline at the sympathetic post-ganglionic terminals. So Dale¹⁸ speaks of cholinergic and adrenergic fibres, and incidentally shows how this conception explains Langley and Anderson's cross-suturing experiments. You can cross suture cholinergic with cholinergic or adrenergic with adrenergic, but you cannot successfully cross suture cholinergic with adrenergic fibres. Cannon thinks that the substance liberated at the sympathetic post-ganglionic terminal is not identical with adrenaline; he thinks he can extract a slightly different one after an excitant action from that appearing after an inhibitory one. But is it not possible that the adrenaline is modified by an ergotoxin-like action in the former case? For Loewi has shown that physostigmine imitates or increases the effect of parasympathetic stimulation because it prevents the blood or the tissue cell from destroying the acetylcholine produced. Just as physostigmine facilitates, so does atropine interfere with the normal chemical results of parasympathetic stimulation. It is important to note that just as much acetylcholine is produced, whether atropine is given or not—the atropine merely blocks access to the tissue cell.

A Receptor Substance between Nerve-ending and Tissue

This leads me to an aspect of endocrinology which is urgently demanding attention. Some thirty years ago Langley and Elliott independently postulated the existence of a receptive substance between the nerve-ending and the tissue as necessary to explain the facts then known. If such a postulate was required then, how much more is it needed to-day. Just as the appropriate chemical material may get into this receptive substance so may a toxin. G. N. Myers has shown that a therapeutic drug may seize on the receptive substance and thus bar the way to the ingress of the toxin. It seems to me that the pharmacology of the future will have to concern itself with the natural history of these receptive substances, and find out in what way they can be helped by drugs both positively, by facilitating their reactions, and negatively, by blocking the way against the entrance of toxins. Nor is this topic remote from my subject, for Zondek maintains that the adsorption of a hormone such as thyroxine is decreased in the presence of narcotics, such as the barbiturates which are able to adhere to the cell surface and thus to displace the hormone from it. But it is also germane to my subject in a wider sense. Sir Henry Dale, in his recent Harveian Oration before the Royal College of Physicians,¹⁹ reminded us that we are still entirely without any conception why a particular cell should be sensitive to a particular

chemical substance or why the same substance should augment the activity of one type of cell and inhibit that of another. He indicates indeed precisely the problem to which many minds are beginning to devote themselves—the nature of these receptive substances. The nature of the stimulus has been intensively studied, but it is now clear that this is only half, and perhaps the simpler half of the question. The importance of the responsive capacity of the receptor tissues was clearly indicated by Harrison in his Harvey Lectures for 1934. He showed that when transplantation is effected between embryos of species of different sizes, the transplant responds according to its inherited growth capacity rather than to its new endocrine environment. As Keith pointed out some years ago, the partial gigantisms in certain cases of hyperpituitarism can only be explained on the theory that the locally hypertrophied tissues had developed a special sensitiveness to the growth hormone. H. M. Evans has recently shown that the response of the dachshund and of the sheep dog to injections of the pituitary growth hormone is entirely different. Indeed, if such things were not so it would be difficult to account for the structural plasticity of the dog in the hands of the breeder.

Again, after the menopause oestrin may be present in large amounts yet reproductive cycles cease, as if the reproductive organs had lost their capacity to respond rather than that the hormonal stimulus had failed.²⁰ According to Zondek the fact that hormones in such minute quantities can produce marked generalised effects indicates that they act as catalysts; their activity seems apparently to depend upon the integrity of cellular structure; they are *physical* catalysts. He maintains that the hormones circulate in the blood in an active form; not until they reach the organ of their destination, where they are adsorbed, do they become activated. But at present we have no inkling as to the mechanisms by which any such cellular response is produced or rendered specific. Hopkins,²¹ commenting on the comparative failure of the attempts to correlate chemical structure with pharmacological action, pointed out that so far the investigation had been one-sided and should involve consideration of the structure of the cell. The same comment is applicable to the present position of endocrinology.

For a time after Starling developed his conception of the chemical control of the body by hormones, the pendulum swung so far in that direction that it seemed as if the nervous system would be deprived of its pride of place, although Starling himself had pointed out that its special function was to provide for special rapidity of response when required. There are a good many examples of a double mechanism in physiology, and it might be expected to occur in the endocrine system. Cannon's theory of the emergency action of adrenaline in coming to the assistance of the defensive apparatus of the sympathetic is a good example, which, though seriously criticised by Stewart and Rogoff, seems to have re-established itself in favour. Indeed, Dale's work makes it all the more intelligible and probable. Then the nervous control over the pancreatic secretions, both external and internal, became recognised in addition to chemical methods of stimulation such as secretin. If the recent claims²² are substantiated, that the oral administration of a duodenal extract can keep the blood-sugar of a diabetic normal after he has first been treated by insulin, not only will this double mechanism have been proved for the internal secretion of the pancreas but a therapeutic advance of import-

ance will have been made. And so the pendulum is swinging back again. But lest it should be thought that the propositions, with which I started, stressed the nervous control too much, I will try to restore the balance by referring to recent work on the organiser in the embryo.

The Organiser in the Embryo

We have realised for years that lowly organisms react to such stimuli as light and chemical agents at an evolutionary level before a central nervous system has appeared. But recent embryological work has shown the profound influence exerted by chemical agents on the very genesis of the nervous system. Some twelve years ago Spéman showed that if he transplanted a group of cells from the dorsal lip of the blastopore—i.e., the part where a central nervous system would first appear in the development, to some other part of an embryo—it would lead to the initiation of a central nervous system there, however different the situation was from the normal one. He could produce two central nervous systems at right angles to each other. He called these cells the organiser. Recently the Needhams and Waddington²³ at Cambridge have shown that they can reproduce all the effects of the organiser by extracting a chemical substance from these cells which resists both freezing and boiling. It is therefore a very definite chemical entity but not a ferment. Thus from the very start chemical and nervous mechanisms are interdependent. They have now gone on to some most exciting observations. They have been able to imitate this chemical organiser synthetically and it appears to be closely allied to, if not identical with, oestrin which we know to be a sterol. Thus the ovarian hormone is apparently carried on to the next generation and is primarily responsible for organising the central nervous system. These observers have also been able in a similar way to lead to the formation of various mesodermal structures in parts of the body to which they are foreign.

It seems to me probable that the formation of teratomata is to be explained by the escape of such chemical organisers from their proper site. Dr. Needham has called my attention to some observations by Witschi²⁴ on the results of delaying the fertilisation of amphibian ova. If the sperm cell is not allowed to unite with the egg cell almost at once, there is a disturbance of the normal sex-ratio in the offspring. If there is a further delay the organiser is liberated at the wrong time and place and teratomata result. Finally, if there is a still greater delay exceedingly abnormal monsters result which actually produce metastases when implanted into adult amphibia. Holtfreter in Munich has already applied these results to the explanation of teratomata in human beings.

It would be a valuable piece of gynaecological research to see if the occurrence of maternal salpingitis or endometritis, which might well delay the fertilisation of the egg cell, could be correlated with the incidence of teratomata. But it would be difficult because a teratoma may produce no symptoms for years. However, Aschheim²⁵ states that the gonadotropic hormone of pregnancy is to be found in the urine of patients suffering from a teratoma, even in men! This may provide a diagnostic test of real value, and seems to make still more probable the association of teratomata with oestrin gone astray, as it were. Incidentally, I may suggest that the discovery of the importance of oestrin for the development of the embryo may explain why the

chorionic villi of the placenta should manufacture it in such large amounts. Hitherto I do not know that a reason has been offered for this striking fact.

Relation between Œstrin, Calciferol, and a Carcinogenetic Substance

That œstrin, calciferol, and the carcinogenetic substance in coal tar should all be closely related sterols is remarkable. It is extraordinary to find that the necessary stimuli to the growth of the next generation, to the ordinary growth of bone, and to the disorderly growth of malignant disease are due to closely similar chemical substances; that they should to some extent be interchangeable is even more extraordinary. The fact that teratomata stand halfway between abnormal twinning and malignancy is full of interest. It is true that some critics declare that to say that all these conditions are associated with alterations of sterol metabolism is no more than saying that another group of conditions are associated with altered protein metabolism, so manifold are the sterols. Loeb²⁶ is of opinion that though the hydrocarbons of tar and the œstrogenic hormones may be more efficient than other factors in producing cancer, in principle they do not act differently to numerous other conditions which may cause it. They seem able to induce the change at any point where they come into prolonged contact with tissues which still possess the potentiality of growth and proliferation. But I think such criticisms rather unnecessarily belittle a remarkable series of mutually consistent observations. The widespread importance of sterols in what one may call the metabolism of the moment, has received additional evidence from some recent researches of Carter and Mapson,²⁷ who find that for the proper functioning of both voluntary and cardiac muscle in the frog, a definite proportion between the concentrations of acetylcholine and sterols in the tissue is necessary. They find moreover that many of the sterols can replace each other in this as in their other actions. Further, they showed that if thyroxine is added to the Ringer's solution in which the muscle is bathed, a tetanic contraction instead of the normal single twitch results on electrical stimulation if this acetylcholine sterol balance is disturbed. Here are some hints as to the lines along which research may reveal something of the factors in the receptive mechanisms.

Sex Reversal

It may be well to say something on sex reversal in general. Undoubtedly the initial bias in sex differentiation is determined by the chromosomes. But although this is the sole and efficient cause in, for instance, insects, its effect is much slighter in birds and mammals, and has to be reinforced by the endocrine activity proper to each sex. Indeed, as Woollard²⁸ has pointed out, before this time is reached the influence of the chromosomes is so weak that the embryo passes through an indifferent or bisexual phase. This is followed by a brief interval when a masculinising tendency apparently occurs in both sexes; in the female it declares itself as a medullary mass in the rete of the ovary which is really a testicular rudiment, and which may later in life become the site of a virilising new growth. The gonadal territory in the embryo consists in the first instance of a ridge on the medial side of the mesonephric mass. It seems certain that sex reversal is caused by an abnormal growth of mesonephric derivatives which are normally present, though only

in a rudimentary form in the female. It follows that the testis is monosexual while the ovary is bisexual, with a male medulla and a female cortex, as it has been expressed. Therefore, physical sex reversal can only occur in woman, and may be due to—

1. Overaction of a basophilic adenoma which inhibits normal ovarian activity, allowing the rudimentary masculine elements to reassert themselves.

2. Overaction of the adrenal cortex, which is mesonephric and contains similar cells to those of the testis.

3. Overaction of mesonephric cells in the rete ovarii, which, as in some of the arrhenoblastomas first described by Pick,²⁹ may actually develop convoluted tubules resembling the seminiferous tubules of the testis.

Closely similar syndromes of virilism may originate in any one of these three positions and are all due to absolute or relative overaction of masculinising mesonephric structures. On the other hand, the testis being monosexual, sex reversal in man can only be psychogenic.

Conclusion

To state briefly the view of the integration of the endocrine system which I am attempting to visualise, there is doubtless an autonomous activity of these glands according to the steady biochemical demands of the body, but their activity can be profoundly modified and extensively controlled by centres in the diencephalon which are largely concerned with emotional expression. These centres may operate directly through the sympathetic nervous system (indeed, the hypothalamus has been called the head ganglion of the sympathetic) or indirectly through the chemical activities of the anterior pituitary. The anterior pituitary forms two basic secretions probably of a protein character, one being stimulating, the other inhibitory in effect. They correspond in fact to Sharpey-Schafer's original distinction between a hormone and a chalone. It is suggested that the former is produced by the eosinophil, the latter by the basophil cells. These basic secretions are capable of chemical modification according to the needs of the body, and are then ready to stimulate or restrain the secretion of simpler hormones by the other endocrine glands, including the post-pituitary. It may be, as Zondek³⁰ maintains, that the hormones circulate in an inactive form, only becoming activated when they reach their destination. This indeed might explain some of the observations on the alleged hormone-antihormone linkage. Certain it is that their destination is decided by some peculiar receptive capacity in the structure on which they act, catalytically or otherwise. What determines that receptive capacity we do not know as yet. But we can say that the whole process appears to be a special case of the general law that nervous stimuli, whether passing from the diencephalon to the pituitary, or down neurons to pre- and post-ganglionic endings, act through the intermediary of chemical substances locally produced. And we may find some further support for this view in the fact that, in one instance, the same substance, adrenaline, is the final product of either hormonal or nervous activity.

Historically it is interesting that in 1775 Borden wrote: "Every organ serves as a workshop for the preparation of a specific substance which enters into the blood; such substances are useful to the body, and are needed in order to maintain its integrity." Here indeed was the germ of the idea of internal secretion, which was, however, to lie dormant for more than a century. In its renaissance Victor

Horsley played an important part, though at the outset he showed a caution not always characteristic of him. It is not merely for that reason that we are here assembled to do honour to his memory. It is of the man himself of whom we are thinking— attractive, vivid, eager, enthusiastic, a very Rupert of debate, and may I say an intellectual hormone in his effect upon others. Osler tells us that in October, 1873, he listened to an introductory lecture at one of the largest of the London medical schools, the burden of which was that the art of surgery had all but reached its limits! In the falsification of that gloomy prognosis, Horsley with his pathological training, his new ideas, his fresh technique, must be allotted an honourable share. For all these reasons we honour his name and cherish his memory.

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THE VALUE OF GASTROSCOPY

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(WITH COLOURED PLATE)

THE invention in 1932 of a flexible gastroscope by Wolf and Schindler marked a new era in gastroscopy. The instrument is such an enormous improvement upon anything which had been produced previously that it has entirely replaced the older instruments, which were chiefly of the Sussmann type and semi-rigid (Fig. 1.) and has converted a somewhat dangerous and uncertain operation into one which can be performed with no risk and little discomfort. The instrument differs from its predecessors in that the part which enters the stomach is made of rubber and is thus truly flexible, and may be bent in any direction. The degree of flexibility is not much less than that of an ordinary stomach-tube, while its diameter is approximately the same. A clear vision can be obtained with the flexible part curved on the rigid part, which carries the eye-piece, to an angle not exceeding 60 degrees.

Before any method of investigation can claim a place in clinical medicine it must be shown that its value to the patient is worth any risk or discomfort entailed in its performance. It would thus be unwise to regard the recent display of enthusiasm for gastroscopy in European clinics as a correct index of its clinical value. Anyone who has examined the flexible gastroscope cannot fail to be impressed with its wonderful ingenuity, and the possibility will arise in his mind that enthusiasm begotten of the

instrument itself has unwittingly been translated into magnification of the results obtained with it, in order that its use may be justified. In other words, is it gastroscopy or is it the gastroscope which appeals? I have tried not to allow myself to be thus influenced in this attempt to assess the value of the modern gastroscope to clinical medicine.

My interest in the Wolf-Schindler gastroscope was first aroused by an editorial appearing in *THE LANCET* in 1933.¹ Soon afterwards I visited Dr. Norbert Henning's clinic in Leipzig, and later that of Prof. François Moutier in Paris, and I am greatly indebted to both these gentlemen for the generous way in which they instructed me. Immediately on my return from Henning's clinic I began to practise gastroscopy at King's College Hospital.

The Examination

Gastroscopy is done after the routine radiological investigation, so that obvious contra-indications to

it, such as oesophageal stenosis and aortic aneurysm, are avoided. There is no risk whatever if ordinary care is exercised. The examination is carried out under local

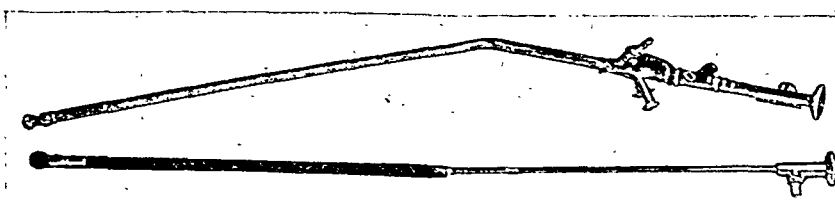


FIG. 1.—The Sussmann gastroscope (kindly lent by Mr. Arthur Edmunds) and below the latest pattern Wolf-Schindler flexible gastroscope. The Sussmann instrument is all metal, but the distal half of the Wolf-Schindler instrument is made of rubber.

anaesthesia (2 per cent. Dessicaine), after a preliminary injection of morphia and atropine, with the patient lying on his left side on a special table. As the flexible part of the instrument is no larger in diameter than an ordinary stomach-tube its passage is not a matter of great difficulty, and neither does it cause any great distress to the patient. In both respects there is, naturally, considerable variation in different individuals, and both diminish as the experience of the operator increases. So far there has been no failure to pass the gastroscope.

¹ The Flexible Gastroscope, *THE LANCET*, 1933, ii., 813.

After the instrument has passed through the cardia the rest of the introduction is made under vision, the stomach being moderately distended with air from a bellows attached to a special arm near the eye-piece of the gastroscope. The patient is conscious of a dull pain if the instrument presses at all upon the greater curvature, and this may give rise to considerable distress in the nervous subject. It is, however, not always necessary to bring the gastroscope into contact with the greater curvature; in the event of its necessity it may be done so gently that the discomfort is slight and transient.

Distension of the stomach with air does not cause much distress provided it be of moderate degree and the air be not forced in too quickly. The chief distress to the patient in this connexion is inability to express his apologies to the operator should he involuntarily belch up some of the air while the examination is in progress! The day after examina-

confidence declare what area of the stomach he has in the field of the gastroscope at any given time. He must learn to distinguish the greater from the lesser curvature by the character of the mucous membrane alone, and by the same token to distinguish the anterior from the posterior wall. The stomach as viewed through the gastroscope differs vastly from all conceptions of it derived from previous anatomical, physiological, and radiological studies. Its normal gastroscopic appearance and motility can be learned only by actual practice upon the living subject; for experience upon the cadaver or upon the phantom stomach—however ingeniously the latter be constructed—is entirely without value.

The area which may be inspected in the average case is shown diagrammatically in Fig. II. The fundus of the stomach—that is, the part under the diaphragm situated at a higher level than the cardia—cannot be seen. In most of the cases this applies also to the greater curvature aspect of the antrum. The pylorus itself is visible in rather more than half the cases—excluding those in which there is midgastric stenosis. The ability to see it depends largely upon the angle which the antrum makes with the body of the stomach. Frequently the pylorus may be clearly seen when relaxed, but as it contracts it disappears out of the field behind the greater curvature wall of the antrum, or vice versa.

The view obtained of the stomach wall is not distorted and is perfectly clear—as clear every bit as that to be obtained of the bladder at cystoscopy under ideal conditions. In the normal stomach the mucous membrane is of an orange colour and thus differs from the white appearance of the normal mucosa in the bladder and rectum. At first sight, indeed, the normal stomach appears to be inflamed because of this. The very powerful illumination given by the gastroscope causes very complex light effects, the light being reflected brilliantly from the moist surface of the stomach so that that part of the field which faces the light may appear to be of a dazzling pink-white, whereas the periphery is of a darker orange. The complexity of the effects produced is due to the presence of the numerous folds. This lighting effect, however, in no way interferes with the identification of pathological changes once the operator has got used to it.

LANDMARKS

The two chief landmarks are, I think, the antrum above (the patient lying on his left side) and what is described by French authors as the "lac muqueux" below. This collection of mucus gathers at the most dependent part of the stomach, which in the lateral position is at the splenic aspect of the greater curvature; it is seen as a brilliantly white area. The antrum in front, though it can always be recognised provided there is no mid-gastric stenosis, varies considerably in appearance (Fig. III. on Plate). On occasion it is merely a narrowing of the stomach whose folds may not completely surround the stomach, but form only two-thirds or even a half of a circle. In this condition the wall of the antrum is relaxed. When a peristaltic wave comes down the stomach, however, the antral wall becomes more clearly defined and on occasion it may contract in a sphincteric manner so that the antral chamber is momentarily shut off from the body of the stomach. At first the gastroscopist may think that he is looking at the pylorus, so complete is this sphincteric action.

The lesser curve can readily be distinguished from the rest of the stomach because it contains few or no rugæ, but shows a glistening smooth surface to

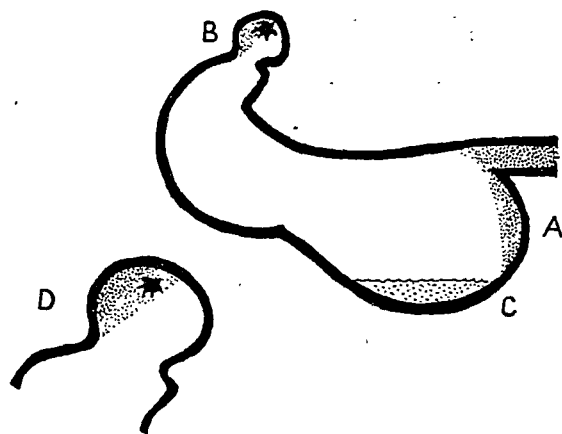


FIG. II.—Diagram to show the area of stomach which may be inspected by means of the flexible gastroscope. The fundus (A) cannot be seen. The greater curvature aspect of the antrum is usually obscured by the pillar of the antrum (B and D). The pylorus (B and D) may be seen in the majority of cases. At C is a lake of mucus, which obscures the mucosa in this area.

tion the patient complains of a little soreness of the throat, but has no other discomfort.

Though as yet I lack the opinion of a patient who has experienced both, it is my impression that the discomfort of gastroscopy is no greater than that of cystoscopy. A further comparison of the two is, however, unfavourable to gastroscopy. In the first place the duration of the examination in gastroscopy should not exceed 5-6 minutes, so that the examiner has less time at his disposal. Secondly, the stomach does not lend itself as readily as the bladder to visual inspection, and difficulties of orientation are far greater. The stomach cannot be uniformly distended, nor can an even pressure be maintained in it. It moves continuously during the examination. This movement is partly due to the excursion of the diaphragm, the stomach moving as a whole, and partly to peristalsis. The latter is the more disturbing to the gastroscopist. As a result of peristalsis the shape of the stomach is continually changing, and consequently some of the landmarks which the gastroscopist uses as a guide to orientation change their relation one to another from one moment to the next. It is thus a matter of great difficulty to get to "know one's way round" the stomach, and although, as on the cystoscope, there is a small knob on the eye-piece which indicates the direction in which the objective lens is pointing, considerable experience is required before the operator can with

the observer. On the anterior and posterior walls the rugæ are numerous and well defined. They form a very complex pattern, but their chief direction is parallel with that of the long axis of the stomach.

As has been stated, the pylorus can be seen in the majority of the cases, but it may be necessary to wait for a considerable time for it to come into the visual field (Figs. III. and VII. on Plate). Normally, it is obscured by the upper and anterior part of the antral fold and it is not until a wave of peristalsis comes down the stomach that it swings into view. The mode of its contraction may be clearly observed in some cases where it is in the visual field all the time. When relaxed it shows as a wide opening with a slightly crenated margin. Through it the mucous membrane of the duodenum can be seen, but this is not sufficiently illuminated for one to observe detail. Its contraction occurs rapidly and the greyish-coloured opening disappears as the walls of the pylorus come together. When closed the pylorus is seen as a dimple from which radiate a number of fine lines. As the pylorus closes a little of the duodenal mucous membrane is forced through into the stomach and with this a spurt of bile comes through from the duodenum. Should there be any doubt in the mind of any that duodenal regurgitation is a normal feature of the pyloric action, inspection of the behaviour of a pylorus in the normal stomach would convince him that it is a very real thing. Throughout the whole examination, as has been said, the stomach is in constant movement, partly from external forces and partly because of peristalsis.

Appearances in Disease

Thus the gastroscope, whose introduction into the stomach is not attended by any great degree of discomfort, enables a direct inspection of the greater part of the mucous lining of the stomach. What helpful data may the gastroscope therefore add to those derived from clinical, radiological, and chemical investigations in cases of gastric disorder? The answer to this question is best considered under separate headings.

GASTRIC ULCER

An ulcer of the lesser curve can always be seen unless it is of small size and lying between two folds of the stomach. The first time an active ulcer is seen a very striking impression is made upon the investigator. It looks what it really is—a great angry sore. Its edges are swollen with œdema and intensely red, and its base is covered with a light yellowish or grey slough. The œdema at the margin of the ulcer produces an edge which is raised into the stomach and thus the ulcer is crateriform (Fig. IV. on Plate). If observed in section it would be thus:



As a result of the œdema the thickness of the stomach wall at the margin of the ulcer is considerably greater than the normal. In an inactive type of ulcer, or rather during the stage of quiescence of symptoms, this œdematous appearance is lost and the ulcer in consequence appears to be a great deal shallower, although the degree of actual penetration of the stomach wall is probably the same in both (Fig V. on Plate). This confirms what I believe Barclay² was one of the first to point out—viz., that the very deep crater shown in a radiogram of an active ulcer is not due to penetration of the coats of the stomach so much as to the wall of œdema built up at the ulcer edge, causing this to project into the stomach; and that the rapid disappearance, or rather diminu-

tion of the size of the ulcer crater, which follows on treatment, is due not to the healing of the ulcer but to the resolution of the œdema. In less active types the base is greyish and inert looking, and the rugæ are drawn together towards the ulcer so that the latter bears the same relation to them as does the axle of a wheel to the spokes. It is not too much to say that one gets an entirely new conception of a gastric ulcer when it is shown up thus in its true colours, and one can far more readily appreciate the suffering which it is capable of causing. Moreover, through the gastroscope one may be able to witness the upsetting effect of the presence of an active ulcer upon the normal movements of the stomach.

Of what practical value is this ability to see gastric ulcers? In what way, if any, does the gastroscope help the clinician? The patient is being submitted to a degree of discomfort by gastroscopy. To what extent may he benefit? Is his gain worth the price he is paying for it? These are the questions which demand an answer before gastroscopy can be accepted as a routine measure in the investigation of gastric ulcer cases.

First, *diagnosis*. Is the gastroscope of value? The answer to this, I think, is yes, but only in cases of doubt. The vast majority of gastric ulcers may be demonstrated radiologically, and with little or no discomfort to the patient. In every clinic, however, there are a certain number of cases in which the clinical history strongly suggests the presence of a gastric ulcer, but in which radiography shows no more than persistent irregularity of the lesser curvature or sometimes of the greater curvature. In such cases gastroscopy is of immense value. The gastroscopist is able to concentrate his attention entirely upon the area of the stomach under suspicion and can readily determine whether or not an ulcer is present. Gastroscopy here is every bit as reliable a diagnostic measure as exploratory laparotomy—and how frequently has this been done in the past with inconclusive results—and, it is needless to add, immeasurably safer and less disturbing. Already in my experience a small ulcer on the anterior wall of the antrum near the lesser curve has been demonstrated by the gastroscope in a case in which X rays showed only persistent spasm of the greater curvature opposite to this situation (Case 1).

A further use of the gastroscope lies in *differential diagnosis*. A large ulcer crater is demonstrated radiologically—is it malignant? The good view yielded by gastroscopy may, as will be discussed later, enable this question to be answered with certainty.

Thus for diagnosis. How far may *treatment* be affected? It is not practicable to use the gastroscope as a direct means of treatment, such as making an application of drugs to the ulcer. It is thus of no value in this connexion. But its use here lies in checking the results of medical treatment, in which we have so far had no absolute criterion of complete cure. The disappearance of symptoms, and of occult blood from the stools, and even of the ulcer crater as shown radiologically, are not entirely reliable guides. By gastroscopy a much greater degree of certainty is achieved. Already in two cases in which the criteria given above were present, a small ulcer crater could still be demonstrated by gastroscopy. Such knowledge well repays the patient for the discomfort of the examination, for it either may bring about the termination of the weary process of dieting or prevent it being stopped prematurely. Thus may gastroscopy be claimed of value in relation to

² Barclay, A. E.: THE LANCET, 1929, II., 1213.

gastric ulcer: (a) in cases of doubtful diagnosis; (b) in differential diagnosis; or (c) as a criterion of medical cure.

NEW GROWTH

Most cases of carcinoma of the stomach do not find their way to the surgeon until a stage has been reached when the diagnosis is made only too readily by clinical examination and easily confirmed by X rays. There are cases, however, in which doubt exists as to whether the symptoms are due to a peptic ulcer or to a growth, or whether a peptic ulcer is becoming malignant—the clinical and radiological evidence being equivocal. Here the gastro-scope offers the most adequate means of coming to a decision. The degree of infiltration; the presence of secondary nodules, the friability of the edge, and the readiness to bleed, are all signs of malignancy which the gastro-scope is capable of revealing. In fact one has the enormous advantage of direct inspection. Just imagine how hampered we should be, say, in making a differential diagnosis of an ulcer of the tongue had we to rely on the history and a radiogram showing the extent and shape of the ulcer cavity! How many errors we should make, and yet how simple a matter it is as a rule to diagnose with certainty a malignant ulcer of the tongue just by looking at it. By gastroscopy we are offered the inestimable advantage of being able to look directly at the ulcer. Herein lies one of its greatest values—in this differential diagnosis between a peptic ulcer and early carcinoma. I do not claim that in every case a differentiation is possible—is it so in carcinoma of the tongue by inspection? But I do plead that it adds enormously to the present routine methods of diagnosis.

In three cases (Nos. 2, 3, and 4) in my series, in which the clinical and radiological diagnosis was ? carcinoma of the pylorus, the gastro-scope showed a normal stomach, with the motor function of the pylorus unimpaired. All three were operated upon. In one there was a narrowing of the pylorus with no sign of growth or ulcer (Case 3). In a second there was some thickening along the greater curvature, starting at the pylorus (Case 2). A gastro-enterostomy was performed, and seven months later the patient reported well, having put on weight. In the third (Case 4) the stomach was normal, and the cause of the symptoms was found to be a carcinoma of the head of the pancreas.

The radiologist has made possible of recent years the diagnosis of simple tumours of the stomach, as also that borderline condition of polyposis ventriculi. Here the gastro-scope will confirm with absolute certainty such diagnoses.

CHRONIC GASTRITIS

Previous to my experience of gastroscopy, largely perhaps as a result of surgical bias, I had regarded a diagnosis of chronic gastritis with suspicion. I had the feeling, no doubt shared by many, that such a diagnosis was in reality a cloak for ignorance. But I now recognise the condition as a very definite clinical entity, and one which is not so very rare.

Changes in the mucosa consistent with such a diagnosis are, in fact, seen through the gastro-scope fairly often. These changes exist in a confusing variety of forms. Basing them on gastroscopic observation, Moutier describes four main varieties of chronic gastritis, with no less than fourteen sub-groups. My own observations have so far enabled me to distinguish only three distinct types: (1) superficial or catarrhal, (2) hypertrophic, (3) atrophic.

Superficial or catarrhal.—In this condition the pathological changes appear to be limited to the surface layers of the mucous membrane, and little change is to be observed in the rugæ. The most characteristic feature is an alteration in colour from the normal orange to a dull red, and a loss of that lustre which, in the normal, reflects the gastro-scope light very brilliantly. The mucosa appears to be thickened, and there is an excess of mucus, which collects between the folds. There may be small superficial erosions, from which a little blood may ooze.

This form of gastritis is most frequently seen in association with a gastric ulcer or carcinoma, and is localised to the area of stomach wall in the immediate vicinity. It may also be seen in very characteristic form surrounding the stoma of a gastrojejunostomy (Fig. X. on Plate).

Hypertrophic.—This condition is characterised by thickening of the rugæ, with deepening of the intervening furrows in consequence. In extreme examples, according to Moutier and other observers, the stomach may develop a mamillated appearance, or fringes of thickened mucosa project into the stomach like polypi. Erosions are seldom seen, there appears to be little tendency to bleeding, and there is no excess of mucus. The condition most commonly exists independently of ulceration or growth (Fig. VIII. on Plate).

Atrophic.—This condition may be readily recognised by the thinness and paucity of rugæ. The mucosa is of a paler hue than normal, and it may be possible to see the larger blood-vessels, which are normally invisible, as they traverse the submucosa. Atrophic gastritis is a rare form of the disease; it is usually associated with one of the anæmias, and is probably not primarily a lesion of the stomach (Fig. IX. on Plate).

It is well known that the diagnosis of chronic gastritis, more particularly of the hypertrophic type, may be made radiologically; without in the least disparaging the use of X rays in this connexion, I have no hesitation in declaring that gastroscopy offers a surer means of diagnosis, especially in the earlier stages of the disease.

POST-OPERATIVE LESIONS—GASTROJEJUNAL ULCER

The mass of literature which has grown up in recent years relating to the diagnosis of gastrojejunal ulcer is eloquent of the uncertainty which at present attends it. I hesitate to make any statement about the incidence of gastrojejunal ulcer for fear of reawakening the now latent enthusiasm of those who wrote so extensively on the subject a few months ago. Nevertheless, it should be made clear that most published statistics of the incidence of anastomotic ulcers include a large number of cases diagnosed by symptoms alone.

The mere appearance of symptoms suggestive of ulcer after a gastro-enterostomy has been performed is no certain criterion of the presence of an actual ulcer at the anastomosis; and X rays, though of immense value on occasion, cannot reveal ulcers here with anything like the precision they reveal ulcers of the lesser curve of the stomach. Symptoms identical with those of a chronic gastrojejunal ulcer may arise from a chronic non-ulcerative inflammation surrounding the stoma. I cannot do better than quote the view expressed by Dr. Hurst in this connexion:³

"A good deal of disagreement about the incidence of the complications of gastrojejunostomy arises from the fact that many surgeons are unaware that a severe gastrojejunitis on both sides of the anastomotic line, with or without superficial erosions, is as common a cause of serious symptoms as a chronic ulcer, and is generally responsible for recurrent hæmorrhage in the absence of pain. This condition cannot be recognised with the X rays nor by inspection of the anastomosis in the course of an operation, with the result that the abdomen is often

³ Hurst, A. F.: Brit. Med. Jour., 1931, 1, 897.

closed after dividing adhesions or some other equally futile procedure. If partial gastrectomy is performed the true nature of the condition is discovered and the patient cured."

My experience thus far has been limited to the examination of three cases in which on clinical grounds there were the strongest reasons for suspecting the presence of a gastrojejunal ulcer following gastro-enterostomy; the radiograms were inconclusive. The intervals following operation were 7, 5½, and 2½ years, and, as far as could be ascertained from the history, the gastro-enterostomy had in each case been performed for the cure of duodenal ulcer (Cases 5, 6, and 7). In all three I was able to make a close inspection of the stoma. I do not know whether I was unusually lucky in bringing all three stomata into the field, although theoretically it should always be possible to see the opening when situated on the body of the stomach, whether anterior or, as of course is more usual, posterior. The view is limited to the gastric aspect, needless to say. A portion of the jejunal mucous membrane may, however, be seen if conditions are favourable.

In no case was a gastrojejunal ulcer present. In all, however, the area of stomach surrounding the anastomosis had the characteristic appearances (already described) of chronic superficial or catarrhal gastritis, two of them with small erosions. In one case the persistence and severity of the symptoms led to operation, and the gastroscopic findings were confirmed (Case 5).

In the light of this experience it is clear that the gastroscope is a very valuable help in the elucidation of suspected trouble in the neighbourhood of a gastro-jejunal stoma. I would even go further and say that the gastroscope is the only sure means of diagnosis.

RARE CONDITIONS

In tuberculous disease or syphilis of the stomach or in conditions such as chronic intussusception through a gastro-enterostomy stoma, it seems probable that gastroscopy would be a very useful adjunct to radiological diagnosis, although as yet none of these rare conditions has come under my observation.

Case Records

The following cases illustrate the value of the method.

CASE 1.—Man aged 39. Complained of pain in the stomach 1½–2 hours after meals, and relieved by sickness. Symptoms began about six years ago, but there had been long periods of remission. In 1930 was radiographed at another hospital and a gastric ulcer reported (? position). Had been treated medically for the past two years. Radiography showed persistent spasm of the greater curvature of the antrum, but no ulcer. Gastric residuum showed hyperacidity.

Gastroscopy (Feb. 2nd, 1935).—Oval shallow ulcer on lesser curvature of antrum. Nil else abnormal. Operation advised, but refused.

CASE 2.—Man aged 65. For 12 months had complained of pain in the epigastrium with some loss of weight. The pain had no relation to meals and was practically constant. He vomited on one occasion and the appetite was poor. Radiography showed a filling defect at the pylorus, and the report queried the possibility of carcinoma of the pylorus. Gastric residuum showed low total acid and no free acid.

Gastroscopy (Feb. 19th, 1935).—Very easy examination and a good view of the distal two-thirds of the stomach obtained, though residue prevented inspection of the proximal end of the posterior wall. Both the pylorus and the antrum were clearly seen. Peristalsis was active and there was no sign of growth. The mucous membrane was healthy.

Operation (Feb. 22nd).—There was some thickening extending from the pylorus for a little distance along the greater curvature, but no actual growth was evident. The stomach was opened and the antrum and pylorus were explored with a finger. No sign of ulceration was present. In view of the thickening at the pylorus gastro-enterostomy was performed. When seen on Sept. 12th he was feeling very well and had put on weight.

CASE 3.—Man aged 54. Vague history of indigestion for many years. During the past three weeks had complained of pain in the epigastrium and sickness. Appetite poor. ? Loss of weight. Examination of the abdomen revealed a rounded immovable mass to the right of the umbilicus, corresponding with the position of the pylorus as shown in the radiogram. X rays showed a five-hour residue in the stomach with a fixed deformity at the pylorus. ? ulcer ? new growth. Gastric residuum showed a high normal acidity. The association of a mass with deformity at the pylorus, together with the history, seemed to make a diagnosis of carcinoma of the pylorus, despite the gastric acidity, a reasonable certainty.

Gastroscopy (Sept. 4th, 1935).—Complete and easy examination. Pylorus normal.

Exploration (Sept. 9th).—Despite the negative gastroscopic finding, the clinical and radiological findings appeared to make operation imperative. The fixed mass proved to be an ectopic kidney of normal size and shape. The pylorus appeared to be normal to inspection and palpation. A small incision was made in the stomach and the pylorus explored with the finger. Apart from the fact that the pyloric ring appeared to be narrower than is usual, no abnormality was found, and the findings at gastroscopy were thus confirmed.

CASE 4.—Man aged 66. Three months' history of pain in the epigastrium. Practically constant and no relation to food. Occasional vomiting with poor appetite and some loss of weight. A history of coffee ground in the vomit on one occasion. X rays showed a deformity at the pylorus which suggested an ulcer in this situation although no crater was to be seen. Gastric residuum showed acid content to be within normal limits.

Gastroscopy (May 3rd, 1935).—Examination was not satisfactory as there was too much residue in the stomach. The patient then spent some time in the hands of the dentist and on May 22nd a second gastroscopy was done. Complete examination was possible and the pylorus was seen to be quite normal. Neither growth nor ulcer was present. The mucous membrane was pale and atrophic.

Operation (May 24th).—Carcinoma of the head of the pancreas was found growing upwards towards the first part of the duodenum. The stomach was normal.

CASE 5.—Man aged 39. Long-standing history suggesting a chronic duodenal ulcer. Two and a half years ago appendicectomy was performed and two years ago a gastro-enterostomy, both at another hospital. One year ago he had been under observation for a return of pain, also at another hospital. He complained of pain similar to his old trouble in incidence but situated to the left of the midline, and there was some tenderness on abdominal examination above the umbilicus. Radiography showed a gastro-enterostomy stoma which appeared to be working satisfactorily. The gastric residuum showed achlorhydria with only a mild response to histamine.

Gastroscopy (May 3rd, 1935).—Complete examination possible. Pylorus normal. The stoma was seen and appeared to be of adequate size, but the mucous membrane of the stomach surrounding it was reddened and swollen from oedema (Fig. X. on Plate). Two small erosions were present.

Operation (May 17th).—There was no naked-eye evidence of a duodenal ulcer and the pylorus was patent. The gastro-enterostomy stoma was examined and no ulcer found, although there was considerable redness of the peritoneum in the neighbourhood. The stoma was excised and the parts restored to their normal relations. Pathological report on a section of the stoma showed inflammatory infiltration of submucosa consisting of polymorphonuclears, eosinophils, and plasma cells.

CASE 6.—Man aged 59. Gastro-enterostomy had been performed for duodenal ulcer five and a half years ago.

After a period of relief of some months only, he began to experience abdominal pain again. This resembled in character the pain before operation, but relation to food was less defined and it varied in intensity from day to day, though there were no periods of complete remission. Latterly it had become more constant. X rays showed a gastro-enterostomy stoma apparently functioning satisfactorily. Gastric residuum showed a low normal acidity.

Gastroscopy (April 4th, 1935).—The pylorus was not seen. The mucous membrane of the distal half of the stomach appeared to be normal. The gastro-enterostomy opening was seen on the posterior wall, near to the greater curvature. The surrounding area was scarred, and the gastric mucous membrane at the margin of the stoma was pale and cedematous. There was no ulcer.

CASE 7.—Man aged 33. Previous history suggesting duodenal ulcer, for which a gastro-enterostomy had been done seven years ago. This was followed by complete relief from symptoms until six months ago, when epigastric pain returned, accompanied by occasional sickness. On two occasions there had been blood in the vomit. X rays showed the gastro-enterostomy stoma to be working, apparently satisfactorily. Gastric residuum showed a low normal acidity.

Gastroscopy (March 3rd, 1935).—Pylorus seen and working normally. Distal two-thirds of stomach normal. The edges of the gastro-enterostomy stoma were well defined, and there was no contraction. The rugæ in the neighbourhood were much hypertrophied, and the mucous membrane reddened. At one point there was an erosion.

Summary

The examination of gastroscopy, carried out with the new Wolf-Schindler flexible gastroscope, is entirely without risk, and its performance does not cause much discomfort to the patient.

The gastroscope permits of direct inspection of the greater portion of the lining of the stomach, but experience is necessary in order to interpret the findings, and particularly to master the technique of orientation. Gastroscopy does not in any way replace or rival X ray examination, which should always be performed before gastroscopy is contemplated.

Gastroscopy may be a useful adjunct to radiological examination in the diagnosis of gastric ulcer, especially in obscure cases, and may be of value to the clinician in checking the results of medical treatment.

It is of the greatest assistance in cases of suspected

carcinoma when the clinical and radiological findings are equivocal. It is the best means at our disposal of making a diagnosis of chronic gastritis, and also of the nature of morbid conditions affecting the stoma in gastrojejunostomy. Finally, gastroscopy may be the means of saving the patient an operation.

The gastroscope has therefore a definite field of usefulness in the management of cases of gastric disorder, and with increasing experience of the operator, and perhaps when still further improvements are made in this most ingenious instrument, this field of usefulness will be more widely extended.

CYSTS OF THE SEMILUNAR CARTILAGE OF THE KNEE

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(WITH ILLUSTRATIONS ON PLATE)

In 1904 Ebner reported the first case to be recognised of a cyst of the external semilunar cartilage of the knee. Since then cysts of the semilunar cartilages have been reported in gradually increasing numbers; the condition is not uncommon and most orthopaedic surgeons probably meet several cases a year. In all the six cases seen at St. Bartholomew's Hospital in 1934, recorded below, histological sections of the cysts and adjoining cartilage were made and it is thus possible to discuss their pathology and origin as well as their clinical manifestations.

This peculiar cystic change in the semilunar cartilage is found about five times as frequently in the external cartilage as in the internal, and males are affected more commonly than females. It usually occurs between the ages of 20 and 30, although it has been recorded in patients over 50 (Ollerenshaw). There is often a history of trauma though this is not in any way as characteristic or constant as in cases of injury to the cartilage. It is difficult to appreciate the exact relationship between trauma and the origin of these cysts, because an injury to

DESCRIPTIONS OF ILLUSTRATIONS ON PLATE

MR. EDWARDS

FIG. III.—A view of the antrum partly contracted. The pylorus is almost fully contracted.

FIG. IV.—An active ulcer of the stomach situated on the lesser curvature aspect of the antrum. Much "catarrhal" gastritis coexists. The mucosa is intensely reddened and swollen so that the rugæ are almost obliterated and there are a few small erosions, one of which is to be seen in the left pillar of the antrum. The patient was a man of 53, who had had symptoms of epigastric pain of 14 days' duration. There had been no previous gastric history.

FIG. V.—A callous ulcer situated on the posterior wall of the stomach near the greater curvature. The rugæ in the neighbourhood are considerably thickened but there is little or no œdema at the edge of the ulcer.

FIG. VI.—Carcinoma of the stomach. A large growth with necrotic surface growing from the posterior wall

and encroaching upon the lesser curvature near to and obscuring the pylorus. X rays showed a 7-hour delay of barium in the stomach.

FIG. VII.—The pylorus semi-relaxed. The stomach in this case was atonic and little peristalsis was observed.

FIG. VIII.—Chronic hypertrophic gastritis. Hypertrophy of the rugæ with increased vascularity of the mucous membrane.

FIG. IX.—Chronic atrophic gastritis from a case of pernicious anaemia. The mucous membrane of the stomach is pale and the rugæ are small and poorly defined. Owing to atrophy of the mucosa the blood-vessels of the lesser curvature can be clearly seen.

FIG. X.—Gastro-enterostomystoma. (Case 5.) The gastric mucosa is swollen and cedematous. There is excess of mucus and there are two small erosions near the orifice.

MR. HOSFORD

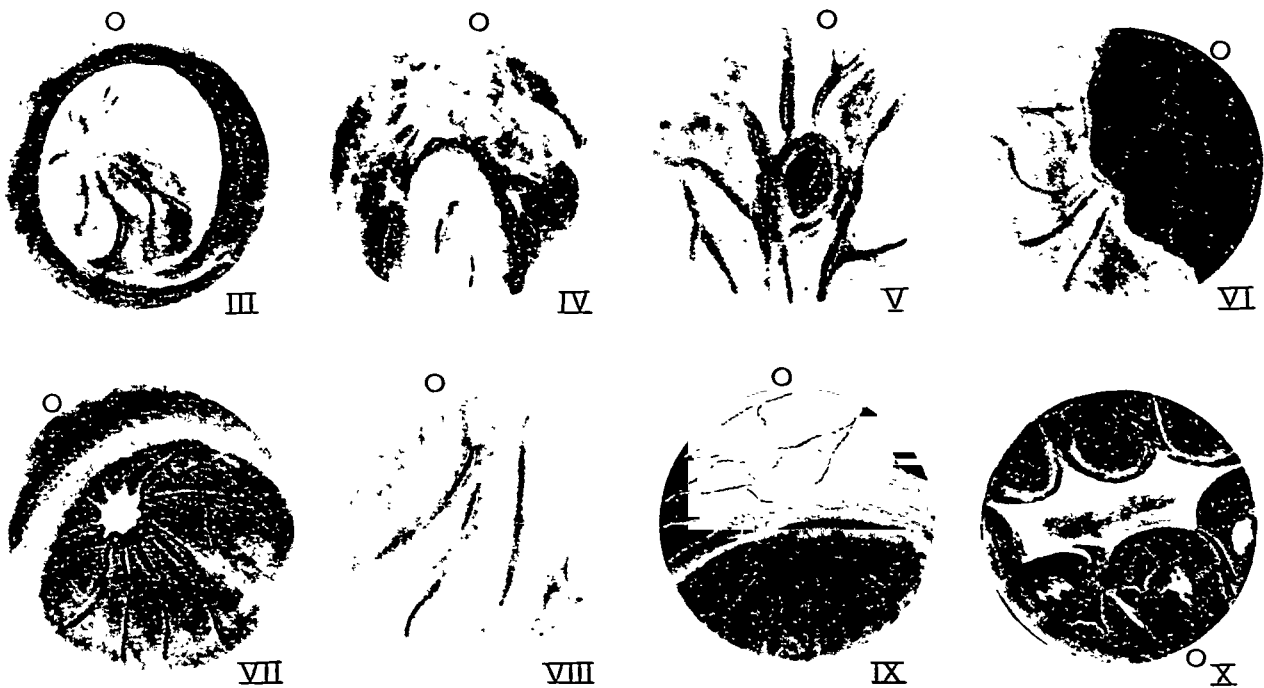
FIG. I.—An area of mucoid degeneration without any cyst formation. ($\times 60$.)

FIG. II.—Great thickening of artery with consequent narrowing of the lumen. ($\times 60$.)

FIG. III.—Small cyst filled with mucoid material. There is no endothelial-celled lining. ($\times 70$.)

FIG. IV.—Wall of larger cyst. Lining cells resemble those in the underlying fibrocartilage. ($\times 70$.)

MR. EDWARDS : VALUE OF GASTROSCOPY.



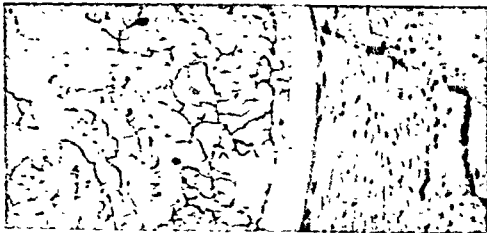
MR. HOSFORD : CYSTS OF SEMILUNAR CARTILAGE



FIG. I.



FIG. II.



DR. BARCLAY & MR. BAIRD : CONGENITAL ABNORMALITIES OF GENITO-URINARY TRACT



FIG. III.



FIG. IV.



FIG. V.

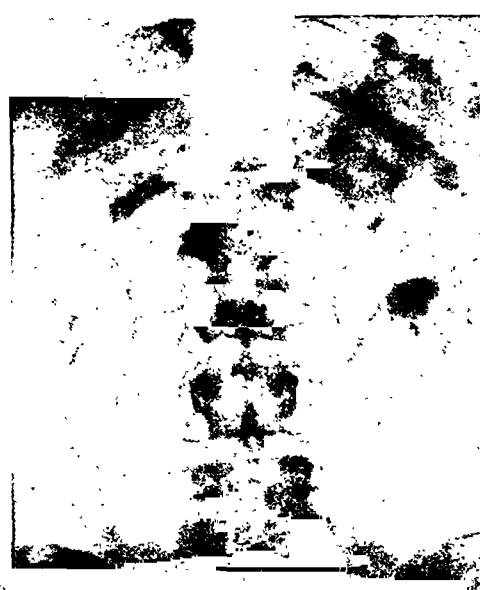


FIG. VII.



FIG. VIII.



FIG. IX.



the knee of one sort or another is so common. The associated history, however, occurs so often that it cannot be neglected.

Usually the patient seeks advice because of a continuous discomfort in the whole knee, aggravated by exercise, and unless the possible presence of a cyst is remembered the surgeon as well as the patient may overlook it. Sometimes he helps in diagnosis by complaining of a swelling on the outer side of the knee, slightly tender, and becoming more painful after exercise. Occasionally the history is that the knee "lets the patient down"; but never that the knee-joint locks. Not uncommonly the knee swells after vigorous exercise.

On examination, when the cyst is of the external semilunar cartilage, a swelling is found on the joint line above and a little anterior to the head of the fibula and to the external lateral ligament. The swelling may be so small as to be hardly perceptible or as large as a walnut. Fluctuation may or may not be obtainable depending on the size and tenseness of the cyst. The range of movements of the joint are in most cases full and painless and neither clicking nor grating are felt. Springing of the external lateral ligament causes no pain; on the other hand, when the tibia is abducted on the femur pain is sometimes felt on the outer side of the joint, presumably produced by compression of the enlarged external cartilage. So far as is known these cysts do not tend to disappear spontaneously although a number of patients say they get smaller and the pain gets less when the knee is rested, only to return when activity is resumed. A skiagram of the joint does not usually show anything abnormal, although occasionally there may be considerable erosion of the tibia, as in the cases reported by Fairbank and Lloyd.

CASE 1.—A. B., male aged 33, a clerk. 1929. Following a "twist of the knee" at football, there was an effusion into the right knee, which gradually subsided. On patient recommencing football three months later a swelling appeared at the outer side of the knee. It got larger and more painful whenever he played games, and improved when he rested. When he kept the leg still in one position for any length of time the knee ached; this had recently interfered with sleep.

February, 1934: The cyst was removed together with the external semilunar cartilage.

CASE 2.—C. D., male aged 24, an accountant. December, 1933. There was no history of injury but patient noticed pain in his left knee while playing football. Even after rest for a month he was unable to continue playing for more than ten minutes, since the whole knee became painful. The pain was always felt throughout the joint, and was not confined to one spot.

April, 1934: The cyst was removed with the external semilunar cartilage.

CASE 3.—E. F., female aged 23. October, 1933. While going downstairs her right knee "gave way" but

did not lock. This recurred on four occasions. February, 1934, patient noticed a swelling on the outer side of the knee; it gradually increased in size. There was no history of injury.

April, 1934: The cyst was removed with the anterior three-quarters of the semilunar cartilage.

CASE 4.—G. H., male aged 26, a clerk. In 1932 the right knee swelled up following football; this recurred on several occasions and caused pain. It always recovered with rest, but never locked. A history of a number of blows on both knees was obtained.

August, 1934: Mr. S. L. Higgs removed the cyst together with the external semilunar cartilage to which it was attached.

CASE 5.—I. J., male aged 26. March, 1933. While patient was playing football the right knee became painful on the outer side. The pain recurred a number of times so that he had to give up playing. Apart from vigorous exercise it was not painful.

September, 1934: The cyst and cartilage were removed by Mr. C. N. Morgan.

CASE 6.—K. L., male aged 24, a gas worker. May, 1934. Aching in the left knee and pain on bending were first noticed when walking. Patient was treated elsewhere for synovitis with rest for six weeks. There was little improvement and the knee remained painful, especially when resting. September, 1934, he noticed a swelling on the outer side of the joint. The knee never locked but it felt unsafe when at work on a ladder. There was no history of definite injury.

October, 1934: The cyst and most of the external cartilage were removed. Within a month the man was able to run upstairs and walk six miles, the pain having completely disappeared.

These cases have been followed up in September, 1935. All are completely free from symptoms, have full use of the knee, and no return of the swelling.

MORBID ANATOMY

Macroscopically, after removal at operation, these cysts are almost always seen to be multiple. They are small in size, varying from that of a pin's head to that of a pea. They are deep to the capsule of the joint and involve and are attached to—in fact are part of—the semilunar cartilage. They are situated on the outer convex border of the cartilage, usually about half-way along its antero-posterior length. When a cross-section of this part of the cartilage is examined the internal sharp concave border is seen to be normal and unaffected. As the section is followed outwards, the cartilage becomes a little thicker than normal, giving the appearance of being expanded with a softer central portion. In the outer part of the section a number of cysts are seen, bulging into the surrounding tissues, as well as involving the cartilage. Some of the cysts are separated from one another by a definite thickness of cartilage, while others are so close together, being separated only by the thinnest membrane, that they might be called multilocular. The cysts contain a somewhat thick,

DESCRIPTIONS OF ILLUSTRATIONS ON PLATE

DR. BARCLAY AND MR. BAIRD

FIG. III. (Case 1).—Unilateral fused kidney. Condition revealed by intravenous pyelography.

FIG. IV. (Same Case).—Intravenous pyelogram showing also two bougies passed into ureters.

FIG. V. (Case 2).—Duplication of pelves and ureters on right side. Retrograde pyelogram showing two catheters entering separate renal pelves.

FIG. VII. (Case 3).—Incomplete bilateral duplication of pelves and ureters.

FIG. VIII. (Same Case).—Calculi at lower end of right fused portion.

FIG. IX. (Case 4).—Complete unilateral duplication of pelves and ureters. Catheters in both ureters and uroselectan in upper pelvis.

FIG. X. (Case 5).—Ureteric obstruction. Intravenous pyelogram.

FIG. XI. (Same Case).—Intravenous pyelogram after bougie has passed the obstruction 2 cm. above ureteric orifice.

FIG. XII. (Case 6).—Renal ptosis with hydronephrosis.

mucoïd, clear, colourless, or slightly brownish material. The remaining portions of the semilunar cartilage, anterior and posterior to the parts affected by cysts, appear to be normal, as do the adjacent articular surfaces of the tibia and femur.

The typical microscopical changes are as follows. Passing outwards from the normal fibrocartilage at the inner concave edge, we come to a region of scattered areas of mucoïd degeneration (Fig. I. on Plate); a little further out may be seen a number of very small spaces with well-defined edges and containing material which takes up the hæmatoxylin stain—apparently mucoïd substance. Further out are much larger but compressed spaces which are the collapsed cysts, some being as large as a pea and containing thick mucoïd fluid. In some sections the arteries at the outer edges of the cartilage appear greatly thickened, almost to the degree of an obliterative endarteritis (Fig. II.).

THEORIES OF ORIGIN

Several hypotheses of origin have been put forward. Ollerenshaw has insisted that the cysts are lined by endothelium and believes them to be developmental in origin. Goldzieher, reporting on Kleinberg's case, describes the cyst as lined by a layer of flat endothelial-like cells and probably arising from lymph vessels. Fisher believes that these cysts are ganglia which originate between the peripheral surface of the external cartilage and the synovial membrane with which it is covered at this spot. Allison and O'Connor suggest that the cysts are the end-result of a degenerative process due to interference with the blood-supply of the cartilage. King concludes by saying that the cysts are compatible with ganglia. His views will be referred to later.

In support of the first two theories, viz., those in which a developmental or a lymphatic origin are propounded, a layer of endothelial cells lining the cysts has been described. A good deal of discussion has arisen in the past as to whether endothelial cells are present or not. A difficulty always liable to arise in studying microscopically a single-layer of cells lining a cavity is that during the preparation and cutting of the section the cells may become detached and lost. However, in a number of published microphotographs and drawings of sections of cysts of the semilunar cartilages, and in sections from a recent case, a layer of lining cells at first sight resembling endothelial cells is clearly seen. This, however, is only seen in the larger cysts. In the very small cysts no endothelial lining cells can be seen, although the cysts are still filled with mucoïd material (Fig. III.). It is difficult to imagine that a layer of endothelial cells could become detached from the cyst-wall during the preparation of the section while the mucoïd content of the cysts remains in position. The same observations as regards a true lining of cells in large as compared with small cysts have been made by Bristow. If the cells lining the cysts are studied carefully it may be observed that although they form a definite continuous layer they are not typical endothelial cells, and that, moreover, they are very similar to the cells in the immediately adjacent fibrocartilage (Fig. IV.). It is difficult to believe that these lining cells are a specific endothelium or that they are anything more than compressed cells from the surrounding fibrocartilage in which the cysts are situated. If an endothelium of developmental origin were present, one would expect not only to find it well-formed in the smaller cysts, but even more noticeable there than in the larger ones, where it would be flattened out owing to stretching. King,

using several modifications of the silver impregnation method, was able to determine the actual type of cell lining the cysts because the silver methods allow differentiation between connective tissue and endothelium. King says: "The larger cysts are lined by connective tissue and not by endothelium. This is apparent not only from the morphology in hæmatoxylin and eosin sections but also from the section impregnated by silver. In these the surface material is seen in most cases to be actual fibrous tissue and the cells are embedded in the fibrous tissue stroma. A few lie on the surface but these do not constitute an endothelium."

It is difficult to believe that Fisher is right when he says that these cysts are ganglia originating between the peripheral surface of the cartilage and the synovial membrane because an examination of a complete section through a semilunar cartilage, where a cyst is present, shows changes not only in the outer edge of the cartilage but also in the deep parts and close to the inner concave margin. Microscopically some areas of degeneration can be seen surrounded by normal cartilage and separated from the periphery of the meniscus. In view, therefore, of the facts that the cysts do not possess an epithelial or endothelial lining and that degeneration is found commencing deeply in the cartilage, the pathology must be considered to be one of *primary mucoïd degeneration* of the cartilage. The cause of this degeneration is, however, not clear. Although an endarteritis is frequently seen in sections of this condition, it does not seem to account, as Allison and O'Connor suggest, for a degeneration of cartilage, a tissue which has few or no blood-vessels in it. It is not possible to blame trauma as the actual cause of this degeneration, either on clinical or pathological grounds. No similar degeneration of cartilage following trauma is seen elsewhere in the body, although it is frequently subjected to injuries, both severe and slight.

TREATMENT

Most patients come for treatment owing either to pain or disability; few come only because of the presence of a swelling. Conservative treatment gives only temporary relief from symptoms until activity is resumed. Therefore, if pain or disability is sufficient to demand treatment, removal by operation is the only satisfactory measure. The pathological change is primary in the cartilage, therefore cysts will recur if only the macroscopic cysts are removed; the semilunar cartilage itself must be taken away also. Through a curved skin incision the fascia lata near its insertion is incised and the cyst is exposed. It is dissected from the surrounding tissues, the joint opened, and the semilunar cartilage exposed; as much of the latter as possible is then removed with the cyst attached.

RESULTS

The end-results after operation, provided there are no changes in the adjacent articular cartilage or bone, are excellent. There are neither pain, weakness, nor any disability in the joint, and the patient can use his limb fully for any games.

I have to thank Mr. Higgs and Mr. Morgan for allowing me to examine the specimens removed in Cases 4 and 5. For permission to operate on the other cases my thanks are due to Prof. G. F. Gask.

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(Continued at foot of opposite page)

THE INCIDENCE OF CONGENITAL ABNORMALITIES IN THE GENITO-URINARY TRACT AS SEEN IN 500 CONSECUTIVE INTRAVENOUS PYELOGRAPHIES

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(WITH ILLUSTRATIONS ON PLATE)

THE literature of congenital abnormalities of the kidneys and ureters lays great emphasis on their rarity. Our experiences at Selly Oak Hospital, using the more recent methods of urological investigation, suggest that such abnormalities are commoner than has been realised. Reviewing 500 consecutive cases referred for intravenous pyelography we have found the following congenital and other abnormalities:

- (a) Unilateral fused kidney showing two normal ureteric orifices with the left ureter crossing to the right side.
- (b) Congenital absence of left kidney with complete reduplication of pelves and ureters of right kidney.
- (c) Six cases of bilateral double ureters and pelves (two with complete reduplication and four with incomplete).
- (d) Seven cases of unilateral double ureters and pelves (two with complete reduplication and five with incomplete).
- (e) A case of probable valvular ureteric obstruction.
- (f) Two cases showing unilateral true renal ptosis.

Many writers have stated that unilateral fused kidney is extremely rare. Some object to this term because the kidneys, though crossed, may be fused only by fibrous tissue and prefer the term "crossed renal dystopia." But as it is highly unlikely that the second kidney ever lay on the opposite side—which means that it never crossed the midline—this expression is even less fortunate. "Unilateral fused kidney" is at little variance with accepted embryological findings and is a sufficiently accurate clinical term.

Pierson¹ states that up to 1932 only 103 cases were recorded. Stewart and Lodge found only one example in 6500 post-mortems; Henry Morris found one in 15,908 post-mortems. Our own series of 500 consecutive cases show one well-defined example of this condition, and one other case, which at first we thought to be unilateral fused kidney, but which we now think combines the two anomalies—viz., congenital absence of one kidney, and complete reduplication of pelves and ureters of the remaining kidney. While recognising that it is not fair to compare a routine series of cases seen at autopsy with a series of cases referred because of possibly urological signs or symptoms, the occurrence of two such cases in one year at one hospital suggests that the frequency of the condition has been underestimated.

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(Continued from previous page)

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In order fully to appreciate the conditions we have found it is necessary to go into certain embryological and pathological considerations.

The cortex or secreting part of the kidney—i.e., the part from glomerulus to convoluted tubule—is formed from the most caudal part of the intermediate cell mass, but the "conveying" part of the kidney (the collecting tubules, the calyces, pelvis, and ureter) is an outgrowth from the lower end of the Wolffian duct. In early embryonic life these structures lie side by side low down in the pelvis. The "outgrowth" or bud develops several branches, which are enveloped by the growing cortex or metanephros. These terminal branches are the collecting tubules of the permanent kidney. At an early stage the renal pelves and ureters lie anteriorly, but as the ureter grows cranially the kidney moves with it from pelvis to abdomen and as it does so the metanephros swings laterally and the pelvis mesially. At the end of the second month rotation into the permanent relative positions of cortex and pelvis has taken place, and by the fifth month migration upwards to loin has been accomplished; thereafter the ureter lengthens by growth caudally, not by cranial migration of the kidney.

As budding ureters and metanephros lie adjacent in the pelvis, in their earliest weeks, adjacent blood-vessels supply both, and as they climb the "ladder" to the loin they acquire new vessels at each new level. When migration has ceased most of the temporary vessels disappear but others remain to supply the structures at different levels—e.g., the inferior vesical, spermatic, and renal arteries.

Such being the normal, how is one to explain the production of (1) unilateral fused kidney, (2) renal agenesis, and (3) double ureters and pelves?

UNILATERAL FUSED KIDNEY

One cannot do more than make as good a guess as possible at what happens. There are only two broad possibilities:—

- (a) The renal masses fuse before migration; "then if this fused mass remains in the pelvis we get the pelvic fused kidney. Migration may carry the fused mass to either side or to the midline, so causing either unilateral fused kidney or horse-shoe kidney. Any extreme variation of blood-supply is not surprising." (Pierson.¹)
- (b) The kidneys develop in the normal situation and are subsequently displaced by some mechanical factor. This appears very unlikely on general grounds, but in its favour is the fact that unilateral fused kidney, unlike congenital absence of one kidney, is never associated with developmental abnormalities of the gonads, adrenals, or other structures derived from the Wolffian body and genital ridge.

Unilateral fused kidney is commoner on the right side. This may be due to rotation of the embryonic mesentery (Pierson).

It is interesting to contrast with unilateral fused kidney the congenital absence of one kidney. In the latter condition either duct fails to give off any ureteric bud on that side, or the bud fails to develop and the adult ureter is represented by a mere fibrous cord. There would, therefore, be either no ureteric orifice at all on the side concerned or at most there would be an abnormally small and blind one; whereas in a unilateral fused kidney there are always two normal ureteric orifices.

The case classified in Group B seems more likely to be a case of renal agenesis on the left side and complete reduplication on the right side, rather than one of right unilateral fused kidney; for the ureteric orifices, as seen cystoscopically and as shown on

the skiagram, are within $\frac{1}{2}$ in. of each other and are both definitely on the right side of the bladder. No ureteric orifice could be found on the left side, and though there was a very good efflux from both the right ureteric orifices, no blue came from any other opening.

In cases of unilateral fused kidney neither cystoscopy nor chromocystoscopy indicates the absence of a kidney on one side, because the ureteric orifices occupy their normal positions in the bladder. It has occasionally happened indeed that the whole renal mass, only part of which has been diseased, has been removed, the operator trusting to what he considered a good blue efflux from a kidney on the other side, for the maintenance of renal function. Hence the desirability of complete urological examination, and, especially of intravenous pyelography, which should, we think—were it not for the expense—be always an initial attack on a possibly urological case.

DOUBLE PELVES AND URETERS

As regards double ureter, there are again only two possibilities: either (a) there are two separate buds—which theory alone can explain two ureters separate in their whole length—or (b) a single ureteral bud divides into two at any point between its origin and the kidney (which explains the ureter which is single near the bladder, but double higher up). Also, as the ureteric expansions are separate, so are the cortical masses that envelop them; so that if there are two ureters there are also two distinct kidneys, fused together.

Several practical points are worth noting in cases of incomplete reduplication of the ureter, arising out of the fact that a ureteric catheter passes usually into the pelvis of the upper kidney and not into the lower.

(1) Retrograde pyelography will give a small shadow, highly placed, of the pelvis. This, when compared with the large renal shadow present, should make one suspicious and indicate that an intravenous pyelogram should be done as well.

(2) If the lower pelvis is infected the catheter may obtain an uninfected urine from the upper pelvis, and unless the presence of the lower kidney is suspected the result will be very misleading. The recovery of clear urine by catheterisation when purulent urine has previously been obtained should not be regarded as a sure sign that the infection has cleared up.

DOUBLE URETERS AND PELVES

Most writers state that the ureter from the lower kidney crossed in front of that from the upper (usually

low down), and that its orifice is always above and outside that of the upper ureter. This finding has not been borne out in our series of cases. We have found by study of lateral views with an opaque bougie in each ureter that no reliance can be placed on any assumption as to their relative positions.

Fig. I., for example, shows an upper ureter which lies at first posterior to the lower one and then crosses to lie anteriorly, at the level of the upper border of the fifth lumbar vertebrae, crossing again to lie posteriorly at the upper level of the first sacral segment, and finally crossing once more at the level of the third sacral segment. Again Fig. II. shows an upper ureter lying anteriorly at its origin, but crossing the lower at the level of the first sacral segment to lie posteriorly for the remainder of its course. The importance of these anatomical findings from the surgical viewpoint is obvious.

Case Records

We can now briefly consider the cases under review.

A.—UNILATERAL FUSED KIDNEY

CASE 1.—Mrs. A., aged 34, was admitted on July 1st, 1935, complaining of three weeks' pain on micturition. It was severe and was preceded by pain in the right loin, which had been coming round to the front for two weeks. Frequency about two-hourly. Urine on admission: cloud of albumin; mass of pus cells and blood corpuscles deposited; no casts; *Bacillus coli communis* on culture.

Intravenous pyelography (Fig. III. on Plate) showed no renal outline or function on the left side; on the right



FIGS. I. and II.—Described in text.

there was a double renal pelvis with a large kidney outline, and the lower ureter crossed to left side in pelvis. Cystoscopy on July 15th, after rest and treatment, showed mild cystitis in a bladder of good capacity. The ureteric orifices were in normal positions and of normal shape. Indigo-carmin (5 c.cm.) produced a good efflux from both ureteric orifices beginning in five minutes and regularly repeated. Later opaque bougies were passed up the two ureters and an intravenous pyelogram was taken. This confirmed the anatomical diagnosis (Fig IV. on Plate).

On her discharge the patient had no symptoms and her urine was sterile.

B.—CONGENITAL ABSENCE OF LEFT KIDNEY WITH COMPLETE DUPLICATION OF PELVES AND URETERS ON RIGHT SIDE

CASE 2.—A woman aged 21, with no noteworthy previous illnesses, was admitted complaining of pain in the back and right loin of four days' duration. Temp., 99.4° F.; pulse-rate, 80; respirations, 20. She had vomited on the day before, but had no dysuria. The abdomen showed no rigidity and there was no special tenderness over the right kidney either in front or behind; very slight deep tenderness was left over the right iliac fossa. Intravenous pyelography showed no renal outline or

function on the left side in 30 minutes. On the right the renal outline was large and there were complete double pelves and ureters. Retrograde pyelograms (Fig. V. on Plate and Fig. VI.) show clearly the two opaque catheters emerging from two separate ureteric orifices and passing up to the separate renal pelves. Chromocystoscopy showed double right ureteric orifices, the inner of which was more active than the outer, though both showed good efflux; the orifices were about $\frac{1}{4}$ in. apart. There was no evidence of any left ureteric orifice. Retrograde pyelography along both ureters confirmed intravenous findings.

It should be borne in mind that the radiographic appearances do not necessarily give the degree of true fusion present in any case; there may be complete continuity of cortical tissue or merely two separate kidneys held loosely together by connective tissue. In both the above cases, however, the renal outline was seen to be continuous, and so far as can be gathered there was true renal fusion. In both these cases there was an infection of the lower pelvis but not of the upper one; this characteristic has been noted by previous writers.

C.—BILATERAL DOUBLE URETER

The six cases in this group may be tabulated as follows:—

Complete Duplication (2)

Sex and age.	Clinical findings.	Observations.
M., 16	Pyelitis right lower pelvis.	Discharged, urine sterile.
F., 23	Pyelitis left lower pelvis.	"

Incomplete Duplication (4)

M., 34	Small calculus below fusion of ureter, right side, with hydronephroses lower pelvis.	Calculus passed. Recovery.
F., 28	Nil definite found.	—
F., 42	Pyelitis lower pelvis.	Recovery. Discharged, urine sterile.
F., 21	Enlarged upper right ureter with two faceted calculi below the fusion just above right ureteric orifice. (Case 3: Figs. VII. and VIII. on Plate).	Calculi removed by vesical route. Uneventful recovery.

D.—UNILATERAL DUPLICATION OF PELVES AND URETERS

In this group there were seven cases:—

Complete Duplication (2)

Sex and age.	Side.	Clinical findings.	Observations.
F., 20	R.	Pyelitis lower pelvis.	Discharged, urine sterile.
F., 28	L.	Hydronephrosis, &c., upper pelvis with pyelitis, poor function lower pelvis (Case 4: Fig. IX. on Plate shows catheters in both ureters and Uroselectan in upper pelvis).	Discharged relieved.

Incomplete Duplication (5)

F., 10	R.	Nil definite.	—
F., 19	R.	Pyelitis right lower pelvis.	Discharged, urine sterile.
M., 26	R.	Nil definite.	—
M., 28	L.	Pyelitis both pelves, poor function.	Discharged relieved.
F., 33	R.	Pyelitis lower pelvis with some dilatation of ureter.	Discharged, urine sterile.

It will be noted that (a) out of 13 patients with double ureters, &c., 9 were female and 4 male;



FIG. VI. (Case 2).—Opaque bougies passed through the separate ureteric orifices. (Course of bougies has been made clear.)

(b) in 9 cases showing proved pyelitis, the lower pelvis was alone involved 7 times, the upper pelvis alone once; (c) in 7 cases of unilateral duplication 5 were on the right side and 2 on the left.

E.—URETERIC OBSTRUCTION—PROBABLY VALVULAR

Other congenital abnormalities of the ureter appear to be rare and therefore of some interest. We consider the following case a striking example of an uncommon type of abnormality.

CASE 5.—Female, aged 22. Frequency of micturition throughout her life. Intravenous pyelography (Fig. X. on Plate) showed on the right side well-marked enlargement of calyces and pelvis with dilatation of the ureter, increasing to the level of the upper border of the first sacral segment. At this level the ureter, about 1.5 cm. in diameter, was seen to be well filled with the dye and showed a sharp semicircular, concave border with the concavity downwards at the site of obstruction; no further delineation of the ureter below this level was discernible on the intravenous pyelographic examination. The opposite side appeared normal.

Cystoscopy showed some cystitis with normal ureteric orifices; an opaque bougie was felt to hitch approximately 2 cm. from the right ureteric orifice. After eventually passing this obstruction the bougie was passed up to the renal pelvis and simultaneously a second intravenous injection of uroselectan was given (Fig. XI. on Plate). It is interesting to note that at approximately the level of the obstruction, just above the ureteric orifice, the ureter itself is seen to be enlarged for approximately an inch. When the bougie was withdrawn very purulent urine was discharged. This urine showed a large mass of pus cells and organisms. The kidney was removed together with the ureter to the level of the upper border of the fifth lumbar vertebra. Unfortunately it was not possible to take the ureter to the level of the obstruction as seen in the intravenous pyelogram. When examined

later the ureter was seen to be much hypertrophied with the wall increasing in thickness from the pelvi-ureteral junction downwards. There was no obvious evidence of valves in the specimen under observation, though it is difficult to explain the appearances found upon any other suggestion. There was no question of calculus being present either during the time the patient was under observation or (so far as we can ascertain) at any time previously.

Valves in the ureter are well known at the junction of the pelvis of the kidney with the ureter, and also at the entrance of the ureter into the bladder. We have been unable to find any definite references to the presence of valves in other parts of the ureter giving rise to obstruction.

In view of—

- (1) The definite obstruction demonstrated by intravenous pyelography;
- (2) The difficulty encountered in passing an opaque bougie along the initial 2 cm. of the ureter above the ureteric orifice;
- (3) The dilatation of the ureter just above the orifice as depicted in the intravenous pyelogram combined with the opaque bougie (Fig. XI.);
- (4) The passage of the purulent urine upon withdrawal of the bougie (i.e., through the upper obstruction);
- (5) The fact that all the disease discovered appeared above the level of the first obstruction;
- (6) Her lifelong history of frequency of micturition;
- (7) And the well-marked hypertrophy of the ureter, with no present or obvious evidence of any calculus being present,

we suggest that our findings are those of partial obstruction arising out of the presence from birth of abnormal valves in two locations: (a) just above the ureteric orifice; (b) in the ureter at the level of the first sacral segment.

F.—RENAL PTOSIS

Throughout our series only two cases have shown definite evidence of ptosis of one kidney. Slight differences of level in the upper or lower poles during inspiration and expiration have been noted, but in these two cases only has there been any anatomical state of true ptosis. The patients were both women and both had well-marked pyelitis; in one of them, aged 51, there was also definite hydronephrosis (Fig. XII. on Plate).

We feel that a series of 500 cases showing such abnormalities as have been described would have demonstrated a large number of "dropped" or "floating" kidneys if such a condition was fairly common, especially as most of our cases are drawn from the poorest inhabitants of Birmingham, some of whom have been unemployed and have probably found it extremely difficult to obtain sufficient food. We therefore suggest that the condition of true renal ptosis, demanding or even suggesting nephropexy, is far less common than some authorities would lead us to suppose.

We desire to express our thanks to Dr. A. M. Nussbrecher for his helpful suggestions upon the case of congenital ureteral obstruction, and to Mr. E. Alexander, head technician of the X ray department, Selly Oak Hospital, for his careful preparation of the prints illustrating some of our cases.

NEW SANATORIUM AT BOURNEMOUTH.—Bournemouth town council is considering the provision of a new sanatorium and an option to purchase some 48 acres of land at Canford Magna for this purpose is being secured.

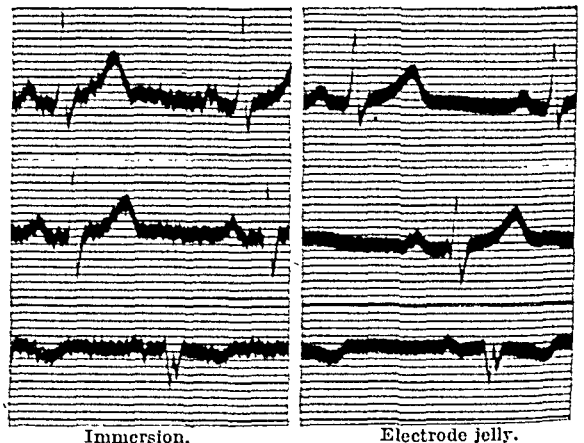
THE USE OF "CAMBRIDGE ELECTRODE JELLY"

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It is of great importance, when an electrocardiograph having a string galvanometer is in use, to obtain an efficient electrical connexion between the patient and the machine. The resistance of the string is in the neighbourhood of 3000 ohms; for efficient working the resistance of the patient should not exceed this value and for preference should be considerably less. If the resistance of the patient is high, in order to standardise the machine, the fibre has to be made unduly sensitive; this results in an increase in deflection time and consequent distortion of the electrocardiogram.

The electrodes in common use can be divided into two groups, the "immersion" and the "bound on" varieties. Up to the present, the former have been the more satisfactory, as it has been difficult, when using the latter, consistently to obtain an efficient connexion of low resistance. The use of "Cambridge electrode jelly" seems to be a great advance on anything that has been tried previously; it yields, as



Two electrocardiograms from the same patient (Case 14) showing the results obtained with immersion electrodes and with Cambridge electrode jelly.

will be seen later, results that compare favourably with those given by immersion electrodes—and therefore, it may be assumed, with those given by bound-on electrodes such as "saline pads." It enables electrodes that are much smaller in size than heretofore to be used efficiently. The jelly is sterile, soluble, and colourless, and it has quite an agreeable odour.

Method of application.—No previous preparation of the limbs is necessary. A small portion of jelly—about the size of the finger-nail—is squeezed on to the forearms and left leg and rubbed over an area as large as the electrode that is to be used. The rubbing, which should be quite gentle, is continued for about ten seconds until a faint flush appears on the skin; no irritative after-effects have been noted, even on a skin where varicose eczema was present. The electrode is placed over the prepared area and gently strapped in position; it is only necessary to have this strap sufficiently tight to prevent the electrode from slipping.

*Made by the Cambridge Instrument Co., Ltd., London.

The actual form of electrode is of no great import. The following tests were made with small German silver electrodes, each having an area of a little over 3 sq. in., but other forms do equally well (e.g., Kohn electrode). Actually, the resistance falls slightly with electrodes having a larger area.

Nature of the test.—Twenty-five cases were taken at random; these were the ordinary patients sent to the department for an electrocardiogram. Each case had two tracings taken, one with immersion electrodes and one with electrode jelly, the results being shown in the accompanying Table. The machine used was the trolley type of Cambridge string galvanometer. Before each lead of each electrocardiogram was taken, the machine was carefully standardised to give the usual 30 mm. deflection when an E.M.F. of 3 millivolts was thrown into the circuit. The actual deflection in mm. is given in each case in the following Table: the resistance of the patient can be easily calculated from the following formula. The resistance of the fibre in use was 3100 ohms.

$$R = \left(\frac{R_1}{R_2} \times \frac{R_2}{1} \right) - R_2$$

Where R_1 = deflection of galvanometer without patient connected.

R_2 = deflection of galvanometer with patient connected.

R_3 = resistance of fibre.

No.	Type of electrocardiogram.	Deflection in mm.					
		Jelly.			Immersion.		
		1	2	3	1	2	3
1	T ₁ and T ₂ inverted ..	15	20	15	18	18	18
2	Abnormal Q R S ₂ ..	20	20	18	15	15	15
3	Normal ..	18	18	16	18	18	16
4	Normal ..	20	20	18	16	16	16
5	Auricular flutter ..	17	17	15	17	17	17
6	Normal ..	25	25	25	20	20	20
7	Auricular fibrillation: notched R ₂ ..	20	20	20	14	14	14
8	Normal ..	20	20	20	20	20	20
9	Normal ..	21	21	21	15	15	15
10	Displacement of R-T ₁ & ..	20	20	20	15	15	15
11	Normal ..	22	22	22	20	20	20
12	Ventricular extrasystoles ..	20	18	18	15	15	15
13	L. axis deviation ..	18	18	18	20	20	20
14	L. axis deviation ..	20	20	20	17	15	15
15	Normal ..	20	22	20	18	18	18
16	Normal ..	20	20	20	20	20	20
17	Auricular fibrillation ..	22	22	22	18	16	16
18	Bundle branch block ..	20	20	20	20	20	20
19	Coronary thrombosis type ..	20	20	20	15	17	15
20	Paroxysmal tachycardia ..	18	18	18	15	15	15
21	Auricular fibrillation ..	22	22	22	20	20	20
22	R ₂ notched ..	22	20	20	18	18	18
23	Normal ..	18	18	16	18	18	16
24	Auricular fibrillation ..	18	18	18	20	20	20
25	Normal ..	20	20	20	15	17	15

It will be noticed that the jelly connexion gave a lower resistance in 16 cases (64 per cent.); in 5 cases (20 per cent.) the resistance was the same as with the immersion electrodes, while in the remaining 4 cases (16 per cent.) the resistance was higher. In many instances the connexion whilst using the jelly was greatly superior and in none was it inferior to any material extent.

There are, however, many other advantages to be gained by the use of the jelly. In the first place, it does not matter whether the patient is sitting or lying down; with immersion electrodes the former position is practically essential. Secondly, somatic tremor is almost always much reduced. The Figure illustrates this point. Thirdly, it is not necessary for the patient to keep so still; I have taken a perfectly satisfactory "lead I." from my assistant whilst he was walking slowly about the room! Talking has practically no effect on the fibre. At no time was

any sign of polarisation evident (as shown by "wandering" of the fibre).

One disadvantage of immersion electrodes is a tendency to spill saline or possibly zinc sulphate solution on the surrounding floor, an accident which may interfere with effective insulation of the patient. No such trouble is experienced when jelly is used. For use on bed cases, too, the absence of liquid solution has obvious advantages. Another minor advantage of the jelly over the "pots" is that it is unnecessary for the patient to remove his boot.

Immersion electrodes are ugly, and if they are unnecessary their removal is doubtless an advantage. The introduction of electrode jelly as a substitute is a useful contribution to electrocardiography.

Clinical and Laboratory Notes

DOUBLE PYOSALPINX DUE TO SALMONELLA NEWPORT INFECTION

By DOROTHY BROWN, M.B. Sheff.

LECTURER IN BACTERIOLOGY IN THE UNIVERSITY OF SHEFFIELD

THE patient, a married woman of 26, had had no children and no abortions. There was no history of severe illness.

Present Illness.—She first felt ill on Dec. 1st, 1930, her symptoms being backache and attacks of slight shivering. These continued for four days, but were not severe enough to prevent her working. On Dec. 5th she was seen by her own doctor and was found to have pyrexia and slight tenderness in the lower abdomen, then attributed to the onset of menstruation. She remained in bed but the symptoms continued, and after about 18 days a definitely tender area was apparent in the lower abdomen. She was therefore transferred to the Jessop Hospital for Women, Sheffield.

On admission (Dec. 22nd) she had a temperature of 101.6° F. and a pulse-rate of 128. A tender area was found just above the brim of the pelvis, the tenderness being greater to the left of the midline and extending to the left iliac fossa. Per vaginam, a hard, immobile swelling was found in the pouch of Douglas.

At operation on Dec. 30th a large left pyosalpinx and a smaller right pyosalpinx were found and drained. As clinically the condition appeared tuberculous, some of the pus was sent to the laboratory for bacteriological examination and guinea-pig inoculation. During the 17 days immediately following the operation the temperature and pulse gradually returned to normal. She went home on Jan. 30th with only very slight discharge and feeling well. Throughout her illness she never experienced headache, acute abdominal pain, diarrhoea, constipation, nausea, or vomiting; the backache, abdominal tenderness, and pyrexia were her only symptoms.

EXAMINATION OF PUS

(a) A direct film preparation showed the presence of numerous pus cells and Gram-negative bacilli.

(b) On culture a pure growth of a motile Gram-negative bacillus was obtained. It fermented glucose, maltose, mannitol, dextrin, and xylose with the production of acid and gas. It had no action on lactose, saccharose, adonitol, inositol, or inulin. The Voges-Proskauer reaction was negative, and there was no indole production. Litmus milk was turned faintly acid then alkaline.

In order to identify the organism agglutination tests were performed with Oxford standard specific agglutinating sera for *Salmonella paratyphi* A, *S. paratyphi* B, *S. enteritidis* Gaertner, *S. aertrycke*, and *S. newport*; but it was not agglutinated by any of these. The bacillus was therefore subcultured daily in broth, and after three

weeks it was found to be agglutinated by *S. newport* (H.sp.) serum in dilutions of from 1/25 to 1/250.

(c) A portion of untreated pus was inoculated subcutaneously into two guinea-pigs. Both animals developed an abscess at the site of inoculation in the course of a week to ten days, and from the pus a pure growth of a bacillus corresponding in every respect with the original organism was obtained. A portion of pus treated by the antiformin method was inoculated subcutaneously into two guinea-pigs. These developed no local lesion, nor did they show any evidence of tuberculosis when killed six weeks later.

AGGLUTINATION TEST

As soon as it was realised that the causal organism was probably of the salmonella group, agglutination tests were performed with the patient's serum (Jan. 6th). No agglutination of Oxford standard agglutinable cultures of *S. typhi*, *S. paratyphi* A, *S. paratyphi* B, *S. enteritidis* Gaertner, or *S. aertrycke* occurred in any dilution, but *S. newport* was agglutinated in dilutions of from 1/25 to 1/500. A second series of agglutination tests performed on Jan. 29th showed that the titre for *S. newport* had fallen to 1/250.

ANTIGENIC ANALYSIS

It was concluded from the above that the organism was a *Salmonella newport* and agglutinin-absorption tests were therefore performed to confirm this.

A. Specific Phase.—Specific phase emulsions and sera (rabbits') were prepared from the strain 2703 (isolated from the patient) and from strains of *S. newport* and *S. reading*. Each of the three sera was absorbed separately with each organism, and in every case the specific agglutinins were entirely removed.

The original titre of each specific serum was 1/10,000.

B. Non-specific Phase.—Non-specific phase emulsions and sera (rabbits') were prepared from strain 2703 and from strains of *S. newport* and *S. aertrycke*, and reciprocal agglutination and agglutinin-absorption tests were performed. The accompanying Table shows the results.

Results of Agglutinin-absorption Tests

Non-specific serum.	Emulsion.	Original titre.	Percentage absorption after absorption with—		
			2703 non-specific.	Newport non-specific.	Aertrycke non-specific.
2703	2703	1/10,000	100.0	87.5	95.0
	Newport	1/2,500	100.0	100.0	100.0
	Aertrycke	1/2,500	100.0	100.0	100.0
Newport	2703	1/10,000	100.0	100.0	100.0
	Newport	1/50,000	97.5	100.0	100.0
	Aertrycke	1/50,000	95.0	100.0	97.5
Aertrycke	2703	1/2,500	100.0	100.0	100.0
	Newport	1/20,000	75.0	100.0	100.0
	Aertrycke	1/20,000	87.5	97.5	100.0

In the case of both the specific and non-specific phase the emulsions were prepared from colonies selected as described by Bruce White.¹

C. Somatic Phase.—Somatic emulsions and sera (rabbits') were prepared from strain 2703, and from strains of *S. newport* and *S. moribificans-bovis*. Reciprocal agglutination and agglutinin-absorption tests were performed with these. In the case of each serum the somatic agglutinins were entirely removed by absorption with each of the organisms.

The original titres of the sera were 1/1000 in the case of strains 2703 and *S. moribificans-bovis*, and 1/500 in the case of the *S. newport* strain.

The emulsions were prepared by growing the organisms on phenol-agar and then treating them with alcohol as described by Muir and Ritchie.²

Discussion of Results of Antigenic Analysis.—The specific phase of strain 2703 was proved to be identical with that of the strains *S. newport* and *S. reading* = D₁D₂ (Bruce White's classification). The non-specific phase showed a slight difference from that of *S. newport* and *S. aertrycke*. There was apparently a minor factor present in 2703 not found in the others, and, on

the other hand, in the non-specific phase of both *S. newport* and *S. aertrycke* there appears to be some antigenic fraction which is not present in the strain 2703. The somatic antigen was shown to be identical with that of *S. newport* and *S. moribificans-bovis* = IV. (Bruce White's classification).

OTHER INVESTIGATIONS

A blood sample was taken for culture but was found to be sterile, as was to be expected so late as the fifth week of illness.

Specimens of faeces and urine were cultured but no organism of the salmonella group could be recovered from them.

The source of infection could not be traced. The patient helped her husband in a sweet and tobacco business and they had no assistants. She did all the housework and cooking herself. They rarely visited others or received visitors. They could not recollect sharing a meal with any other person for some weeks previously. The husband was apparently healthy. He had had no serious illness nor could he recollect even slight indisposition during the last few months. Agglutination tests performed with his blood-serum against the chief members of the salmonella and dysentery groups proved entirely negative.

This case is of interest in that, as far as I know, it is the only recorded case of abscess-formation due to *Salmonella newport*.*

I am indebted to the late Mr. W. W. King for the clinical history of this case.

REFERENCES

1. White, P. B.: Medical Research Council's System of Bacteriology, London, 1929, vol. iv., p. 111.
2. Muir, R., and Ritchie, J.: Manual of Bacteriology, London, 1932, p. 134.

INTUSSUSCEPTION DUE TO INVAGINATION OF A MECKEL'S DIVERTICULUM

BY GORDON DUNCAN, M.B. Lond.

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A BOY, aged 9 years, was admitted to hospital complaining of abdominal pain of five days' duration. The pain was generalised and colicky, and he was said to have had a similar but less severe attack five weeks previously. At the onset, five days before admission, he had vomited once, and he vomited bile-stained material on arriving in the ward. His bowels were open the day before admission and there was no history of passage of blood per rectum.

On examination a tender mass, both visible and palpable, was found filling the right iliac fossa. A diagnosis of appendix abscess was made and Ochsner-Sherren treatment adopted. Twelve hours later the mass had shifted to the midline and the patient's condition was worse. The abdomen was opened by a right paramedian incision and an ileo-ileal intussusception was found. Reduction was fairly easily performed, but about 12 inches of gut, comprising the intussusceptum, was gangrenous and the intussusciens was plum-coloured but viable. A Meckel's diverticulum, 3 inches long, was found invaginated into the lumen of the bowel and formed the apex of the intussusception. The patient was considered to be too ill to stand resection, so the ileum above and below the affected gut was brought together and lateral anastomosis was performed.

* The strains of *S. newport*, *S. aertrycke*, *S. reading*, and *S. moribificans-bovis* used were obtained from the National Collection of Type Cultures. They were as follows: *S. newport*, No. 129 (Newport); *S. aertrycke*, No. 74 (Mutton); *S. reading*, No. 72 (Reading); *S. moribificans-bovis*, No. 2215.

The gangrenous loop was left out of the abdomen and the wound partially closed. On the third morning after operation the bowels acted well and the patient's general condition was good. On the fifth day the gangrenous gut was resected and the bowel ends closed. A corrugated rubber drain was inserted and the wound closed. The patient is now convalescent.

I am indebted to Dr. W. A. Steel, medical superintendent, Hillingdon County Hospital, for permission to publish this case.

TORSION OF THE SPLEEN

ASSOCIATED WITH RUPTURE

By Y. CANTIN, M.R.C.S. Eng.

MEDICAL SUPERINTENDENT OF THE CIVIL HOSPITAL, PORT LOUIS, MAURITIUS

TORSION of the spleen as a cause of the "acute abdomen" is hardly a surgical rarity, especially in the tropics, where enlarged and mobile spleens are common. The following case is remarkable, however, because torsion was associated with rupture and intraperitoneal hæmorrhage.

The patient, aged 50, was referred to us on May 22nd, 1934, from a mental hospital. She had fallen ill on the 20th, when she complained of colic; her bowels had not been opened for two days and the pulse-rate was 132. Nothing abnormal could be found in the abdomen and she was given an enema with a good result. On the 21st her temperature was 100° F., she had rigors, vomited twice, still complained of abdominal pain, and had a pulse-rate of 150. An enema was given on the 22nd with poor result, and when the patient was admitted to the Civil Hospital on that day her condition was as follows: Temp., 100.4° F.; pulse 120, fairly full; tongue furred but moist; features rather drawn. Abdomen moves well with respiration. No distension. No visible peristalsis. A swelling could be made out in the umbilical region, but careful palpation was impossible as the patient was restless and wanted to be left in peace. Vaginal examination revealed some fullness and tenderness in the pouch of Douglas.

Although the exact diagnosis was in doubt operation seemed essential. When the patient was under the anæsthetic, abdominal palpation revealed a firm, mobile, central swelling stretching across the umbilical region towards the right; the right iliac fossa felt quite normal. A right paramedian subumbilical incision was made and as soon as peritoneum was nicked blood welled out of the abdomen; about ten ounces was, by means of a rubber tube, collected into sodium citrate solution for subsequent transfusion into the patient. The peritoneal incision was then enlarged in an upward direction, and the spleen came into view, with a fissure about two inches long and a quarter of an inch deep over its convex surface. Well-marked plastic peritonitis was present, and the organ was adherent to neighbouring intestinal coils and to the large omentum. The adhesions were easily separated and the spleen, which was about four times the normal size, was easily exposed. Its pedicle was then found to be twisted through three and a half turns in a counter-clockwise direction. Splenectomy was performed in the usual way; the splenic vessels were thrombosed, and the spleen itself acutely congested. Whilst clearing the pelvis from blood clot, an ovarian cyst, about the size of a tangerine orange, was discovered on the left side and easily removed. The abdomen was closed without drainage and the patient made an uneventful recovery.

What was the mechanism of the rupture? An infarcted spleen may rupture spontaneously or from slight violence. In reporting a case, Collins Warren¹ writes: "It would seem highly probable that dis-

tension of the capsule nearly to the bursting point by the cutting off of the egress of the blood by thrombosis of the splenic vein had prepared the way for rupture of the capsule by slight violence." As our patient was non compos mentis, self-inflicted injury cannot be ruled out altogether. It is also conceivable that disorderly movements on her part may have caused the rupture of her very much enlarged and mobile spleen, and at the same time initiated the torsion which in its turn arrested the hæmorrhage by occluding the vessels in the pedicle. It seems however more reasonable to suppose that the rupture was spontaneous and that, as not infrequently occurs in twisted ovarian cysts, the torsion was at first sufficient to occlude the thinner-walled splenic vein but not the splenic artery, which continued for some time to irrigate the organ, with resultant acute congestion and finally rupture.

DEATH FOLLOWING PERFORATION OF STERCORACEOUS ULCER

By J. J. O'REILLY, M.B. Belf., D.P.M.

DEPUTY MEDICAL SUPERINTENDENT, WINSON GREEN MENTAL HOSPITAL, BIRMINGHAM

THE patient, a man aged 49, had been admitted to the City of Birmingham Mental Hospital, Winson Green, in 1931. Apart from a large right scrotal hernia and evidence of fatty heart disease, he had enjoyed comparatively good health, and he made no complaint of physical illness until April 29th, 1935.

On that day he complained of vague pain in the upper abdomen. Physical examination revealed slight diffuse tenderness over this area but no other signs. He was unable to retain any food and vomited even after sips of water and milk. His urinary output averaged 16 oz. in the 24 hours but the urine contained no abnormal constituents. His temperature remained subnormal throughout the illness, but his pulse-rate became progressively more rapid and feeble—from 84 at the onset of illness to 114 at the time of death. Two days after the onset of his illness his abdomen became much distended and on the suggestion of the consultant surgeon to the hospital, who considered the condition to be one of paralytic ileus, he was given pituitrin followed by turpentine enemata but without effect.

He died on May 3rd and post-mortem examination showed free gas in peritoneal cavity with a small quantity of semi-solid faeces lying in the neighbourhood of the lower border of the omentum. The large intestine was enormously dilated and filled with faecal masses from the cæcum as far as the middle of the transverse colon. At the latter point there were three small perforations in the bowel wall. On the inner aspect of the bowel at this point there was a stercoral ulcer about 4 in. long lying in the long axis of the intestine.

It is of interest to note that the ulcerated condition, which must have been present for some considerable time, gave rise to no symptoms until within a week of death, and even then there were no signs indicative of the grave condition underlying the illness.

I am indebted to the medical superintendent, Dr. C. W. Forsyth, for permission to publish the details of this case.

ACTON HOSPITAL.—The first stone of the extension to this institution has been laid by the Mayor of Acton. The new building, which is to cost over £18,000, will include a men's ward and an enlargement of the out-patients' department.

¹ Ann. of Surg., 1901, xxxiii., 513.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF EPIDEMIOLOGY AND
TROPICAL DISEASES

At a joint meeting of these sections held on Nov. 16th the chair was taken by Surg.-Captain SHELDON DUDLEY, president of the section of epidemiology, and a discussion on the

Malaria Epidemic in Ceylon

was opened by Sir WELDON DALRYMPLE-CHAMPNEYS. He began with a warm tribute to the work of his co-author, Dr. R. Briercliffe, director of medical services in Ceylon, who was unable to be present owing to a recrudescence of the outbreak. Epidemic malaria, he continued, had received little attention in the island until last year, for attention had been concentrated on the endemic form. Ceylon was shaped rather like a sheep's skull standing on its occiput. The south-west quadrant was the "wet" zone and was normally free from endemic malaria, but had been particularly affected by the 1934-35 epidemic. This was the richest, healthiest, and most populous part of the island, and received both south-west and north-east monsoons. The remaining three-quarters received rain mostly in the early autumn and was relatively dry. In 1934 from April onwards the south-west monsoon had partly failed, and the unprecedented drought had provided ideal breeding-places for the mosquito. It was a remarkable fact that the *Anopheles culicifacies* was the only species proved to be a malaria-carrier in Ceylon. In the upper and middle reaches of the rivers the flow had been reduced to a mere trickle, allowing the formation of many rocky and sandy pools. *A. culicifacies* chose just such clear unshaded pools for its eggs; shallow wells, pools in quarries and brickpits were subsidiary breeding-places. Its natural home was in the dry zone, and it was not found much in the wet zone until the abnormal drought produced dry zone-like conditions in the wet zone. The adult male was not easy to find, but it had been collected in unprecedented numbers during the epidemic period. There was no lack of gametocyte carriers, since in any year an average of 400,000 persons sought treatment at government centres.

The epidemic had broken out in four river basins on the west of the watershed and one on the east. The villages first and worst affected were on the banks of the rivers and the epidemic involved nearly a quarter of the island's area and nearly half its people: an area of 5800 square miles with a population of 3,100,000. Provincial surgeons had been warned to expect malaria, but the sudden overwhelming outbreak had been unanticipated and unprecedented. The first characteristic was the explosive feature; epidemics usually spread gradually. The chart of weekly attendances at the dispensaries showed a sharp rise, and peak at Dec. 22nd (62,000 attendances) with a more gradual fall. From the end of January numbers declined until a secondary wave appeared in April. It was estimated that a million and a half people contracted malaria between October, 1934, and April, 1935, and over 95,000 died. There was an excess of deaths (over 37,000) in the non-epidemic area also. The secondary wave had not been unexpected and it had affected all the five river valleys. The great epidemic had differed from others in

starting in October instead of April. The failure of the south-west monsoon had been followed by a weak north-east monsoon. During the secondary wave many people and villages hitherto unaffected had fallen victims, but the most interesting extension had been upwards. Before April, malaria above 2000 feet had been uncommon, and above 2500 very, very rare; during this wave cases had occurred at 3500 feet, *A. culicifacies* being found there both in larval and adult form. The cases had been less severe and mortality lower in this wave, everywhere except in the Kandy district. Since June there had been steady improvement. The deaths had been down to the expected figure in most districts by September.

Antilarval measures had been started in January, 1935, and consisted of canalisation and oiling of breeding-places. Seven thousand miles of water-course, much of it through thick jungle, would have had to be covered if the whole range of breeding-places had been dealt with; an average worker could only cover a mile and a half a day. Emergency regulations had been issued in February. Elephants had been useful for clearing obstructions. Most cases were of the simple febrile type, responding readily to treatment. Relapses had been frequent because patients had discontinued treatment as soon as symptoms disappeared. There had been only five cases of blackwater fever. Deaths had mostly been due to dysentery and pneumonia. Post-malarial oedema had been regarded as a nutritional phenomenon, and feeding had been arranged for children in schools. Gangrene of the extremities had been seen occasionally. The most important antimalarial measure had been treatment of patients by quinine grs. $7\frac{1}{2}$ thrice daily in solution. This was regarded as safe in unqualified hands, but Plasmoquine and Atebrin were used only in hospitals. Treatment centres had been opened in all badly affected villages. A total of 690 hospitals and 38 temporary hospitals had been opened in addition to the 80 central dispensaries, and 136 estate dispensaries had been supplied with quinine by the government. Over 33,000 lb. of quinine had been served out, and there had never been any shortage. No patient had had to go more than a mile and a half for treatment. There had been in-patient accommodation for 5000 cases, congestion being most acute in February.

Dr. V. B. WIGGLESWORTH said that many factors were at work in the genesis of a malaria epidemic. The appropriate mosquito was, however, a sine qua non. *A. culicifacies* occurred throughout the whole island. In the tea gardens of Assam it was uncommon during the monsoon, which continually flushed the rivers. In the dry season, on the other hand, it was found in myriads in the clear water pools; but because this was the dry season there was no infection. Similar conditions occurred in the hills of Southern India, and other species carried malaria in these parts. In the Punjab *A. culicifacies* found suitable breeding-places every year, and the neighbouring villages were centres of endemic malaria. They had much in common with the endemic areas of Ceylon. In years of excessive rainfall wide tracts of the Punjab became infested, and if the people had lost their immunity great epidemics resulted. The most striking difference was that breeding was favoured by excessive rainfall in the Punjab and by excessive drought in Ceylon and Madras. Given

good organisation, the large towns ought to be able to protect themselves, but antimosquito measures were least hopeful in rural areas where *A. culicifacies* was the carrier. In Malaya good agriculture needed clean drains, and this eliminated the two most dangerous mosquito species. Along these lines lay the best hope for the rural area: the modification of agricultural practice in such a way as to eliminate the mosquito. Unfortunately the abundance of *A. culicifacies* in Ceylon bore little relation to agriculture. The pools were a natural phenomenon and larvae were continually being carried down stream. Nothing in existing experience in the world could give confidence in antimalarial measures for such an area as that involved in the Ceylon epidemic. A great deal more knowledge about the mosquito and its ways was needed: the criteria on which it selected its breeding-places and its choice between man and animals; the extent to which females remained in houses, and such matters. The best hope lay in an intimate study of the bionomics of *A. culicifacies*.

Dr. P. H. MANSON-BAHR said that during the years 1912-13, when he had been in Ceylon, malaria had been the scourge of the low country: the humid, hot, agricultural western and southern districts, and the hot, dry jungles of the north and east. At that time there had been no evidence of primary infections above 2200 feet, although history recorded epidemics above that level in Kandy as well as enormous ravages in the north, central and eastern provinces. The great cities of Anurhadhapura and Polonnaruwa, seats of the Sinhalese kings, were thought to have been abandoned because of malaria. Dr. Manson-Bahr had studied representative series of blood films from all over the island and concluded that the quartan parasite predominated (64 per cent.) and benign tertian next (19 per cent.), the most infrequent being the subtertian (17 per cent.). In those days tanks and ricefields had not been regarded as the main breeding-centres; the mosquito had been found much more abundantly in irrigation streams and the locomotive water-supply troughs beside the railway.

Colonel C. A. GILL added his tribute to Dr. Briercliffe and the Ceylon medical department and emphasised the salient features of the scheme adopted. As soon as the explosion had occurred steps had immediately been taken to mobilise the whole medical resources of Ceylon. Every practitioner, dispenser, sanitary inspector, and student had been enlisted to deal with the emergency. The public health department personnel of all kinds was at once switched over to help the medical department. This brought out the importance of having one head of both medical and public health departments. The next remarkable thing was the sudden expansion of hospital facilities by erecting new temporary buildings and by adapting schools. Branch dispensaries had been turned into central dispensaries, and beyond them had been treatment centres always open, and sub-treatment centres occasionally open. All serious cases had been drafted at once to properly equipped hospitals. Free kitchens had been opened at the dispensaries because the people were suffering from famine as well as malaria, and milk products had been freely available for undernourished children. The sanitary inspectors had been utilised very largely as intelligence officers and quinine distributors in the villages. Weekly reports had been received from every centre, and departmental conferences had been held whenever necessary. The epidemic had attracted a remarkable amount of public attention and some

most unjustifiable criticism had been published. It was the first great malaria epidemic of modern times in the tropics, only paralleled by the Mauritius outbreak of 1867. Previous epidemics had been associated with excessive rainfall and had had only one wave of mortality. The Ceylon epidemic had therefore presented some extremely interesting epidemiological features.

Prof. W. SCHULEMANN said that in the emergency well-tried routine methods had naturally been used, and there had been no time to try new methods and make detailed observations. He discussed the intravenous use of quinine and atebirin. He agreed with the use of atebirin only in hospitals in Ceylon, but thought that this drug would prove to have many advantages owing to its better and more rapid absorption and action. He was sorry that it had rather been pushed into the background. It destroyed the gametocytes to such an extent that they were no longer able to infect mosquitoes, and reduced the relapse rate.

Colonel S. P. JAMES discussed the interaction of the various aetiological agents, and especially the rather puzzling subject of the influence of a non-immune population on the extent of the epidemic. Before the change of climatic conditions the population at risk had had no immunity to malaria. Laboratory work had shown that in non-immune patients the gametocytes occurred in the blood in much greater numbers and so an anopheles got its stomach absolutely crammed with oöcysts after a single feed. After feeding on an immune patient there might be two or three or at most ten oöcysts in the stomach. The mosquito which had taken several hundred oöcysts into its stomach would contain enough oöcysts to infect thirty or forty people, and remained infective for three or four months. The mosquito with only three or four oöcysts in its stomach lost all its oöcysts in biting one person and was infective for only two or three days.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION

A MEETING of this association held in London on Nov. 15th, with Dr. G. E. FRIEND (Christ's Hospital) in the chair, was devoted to

Problems of the Medical Officer in Private Preparatory Schools

Mr. E. WILSON HALL (Eastbourne) said he would approach the subject as a general practitioner, since he and his partner were looked upon as school doctors to 15 private schools. At some of these the doctor chosen by the headmaster or the headmistress was the only one allowed in the school, whereas in others he had known as many as four doctors attending pupils even during the same epidemic. In such circumstances a friendly relationship with colleagues and a strict ethical code were essential. He asked that he might be notified of any infectious disease which started in another doctor's patient, and that all question of infectivity and disinfection should be left to his decision. He welcomed the access of pupils' doctors to his schools, because it allowed of continuation of treatment and general care. But where the child came from outside the town and had no local general practitioner, it was unwise, and not exactly courteous, to ignore the school medical officer and write privately to another practitioner in the town asking his services. A recent case in point

was one in which a child, aged 14½, whom the speaker had looked after for eighteen months, was taken by the parents to a specialist because of an excess of body-weight. Her periods were scanty, and exercise made her short of breath—a common state of affairs, which usually rectified itself in a year or so. That girl was returned to school with instructions to a doctor in the town, who had never seen her, to give her thyroid, let her play no games, and diet her. Mr. Hall also had a word of condemnation of the custom, all too prevalent, of matrons serving out patent medicines sent back with the children by their parents. Most of the children were quite healthy, and this taking of vitamin-containing and other concentrated medicines could not be good for them; nor was the emphasis that was placed on their health. In private schools the doctor had to tread very warily, for he did not want to risk the child's removal from the school. In one or two essentials, however, he must look after the majority and advise the school authority to lose one or more pupils if necessary. In such diseases as scarlet fever, scabies, impetigo, and ringworm of body or scalp he usually allowed a longer period to elapse before permitting return to school than did most of his colleagues; the responsibility for other people's children was a very heavy one. Many parents went abroad leaving their children in charge of relatives or (as he considered preferable) the school authorities with full responsibility. If parents were really satisfied with the school and had met the medical officer, much loss of time could be avoided by dispensing with their permission before operating on appendicitis, otitis media, or similarly urgent conditions.

Certain rules the speaker found useful in dealing with the school matron; for example, any child with a rash was isolated, and no aperient was given in a case of abdominal pain, until after a medical visit. There must be no failure to call the medical officer wherever there was doubt or anxiety. In several of his schools Mr. Hall had instituted examination of each child at the beginning and end of each term, being informed by the matron of any loss or gain in weight. Regular weighing was very important, and provided a ready answer to parental criticism of the school food. He had been surprised at the number of requests received from parents that their children should not be allowed to play certain specified games. In private schools all the games were very well regulated, and even slight over-fatigue was readily noticed. His only criticism on this head was that the sports curriculum was rather too full, it did not allow enough leisure. He greatly favoured all team games; but running must be kept well within the fatigue limit in the developing child, and the preparatory schools he attended no longer held half-mile races. Sea-swimming was very valuable, but the responsibility of taking a crowd of children into the open sea was usually held to be too great, and most of the schools went to the sea-water baths. The swimming season, almost entirely from the baths, produced yearly many cases of otitis media. Though a pre-existing nasal infection was often the cause, and children with any such infection should be kept from bathing, he thought it unwise to encourage high diving, or frequent diving-in and coming out. He had prevented many a middle-ear infection by the use of 20 per cent. Argylol drops up each nostril thrice daily. He was decidedly in favour of inoculation against the common cold and influenza, and had carried it out in several schools for some years. During an attack he again used the argylol drops.

The CHAIRMAN said his experience was that parents nowadays were more apt to complain than they were a few years ago. But once they had been to the school and had an interview with the housemaster and the doctor, complaints largely ceased. The number of patent medicines brought back by boys to school almost constituted a public danger.

The Rev. W. R. MILLS, as headmaster of a large preparatory school, said he could not understand why the modern parent seemed to have so little faith in medicine except when administered by the home doctor. The school doctor had to be a person of extraordinary persuasiveness and strength of personality. It was always a regret to him to see disloyalty on the part of the home doctor to the school medical officer, and to an outsider it seemed a case in which the medical etiquette might beneficially be stiffened up.

Dr. G. H. BICKMORE spoke as a headmaster with a medical training, and said that in his school a health and hygiene committee had been set up to make recommendations concerning all health matters. That body considered that the danger of setting up middle-ear disease in bathing was greater from jumping-in than from ordinary diving. In some schools boys under eight were allowed to participate in cross-country running of half a mile. Wolf-cub sports, also, were often too exhausting for the younger boys. Many medical authorities considered that 100 yards should be the limit race distance for boys under eleven; some said 60 yards, and with the latter he agreed. He was not impressed with the value of inoculation against colds; he set more store by hygienic conduct and the disinfection of clothes.

Dr. GRAHAM FORBES agreed that jumping into the water was liable to drive infected mucus into the Eustachian tube. He did not think cases of otitis media occurred often enough in users of swimming baths to justify the disease being attributed to the swimming. As to running, he agreed that the boy of eight years should not be required to do more than 100 yards, but the born runner might suffer no harm from running longer distances.

Dr. W. ATTLEE (Eton College) said there was always an element of suspicion on the part of the parents as to the medical arrangements of the school. That was due to the two reasons which Mr. Hall had mentioned: (1) that often the doctor never saw the parents at all, and so was acting without any knowledge of them; and (2) that the school doctor could not treat children in the same way as they were treated in their own homes; at home minor risks could be taken which could not be taken at schools. Matrons and doctors at schools were always buffers between the children and their homes, and the interests of the boy were often at variance with those of the school and of the school doctor. If masters would realise, as Mr. Mills did, the difficulty of doctoring boys in school, they would encourage meetings between doctors and parents, and then, he felt, unpleasantness would vanish. With regard to athletics, he thought a boy under twenty was unlikely to damage himself by over-exertion; he had not the will power to drive himself to that extent. It was a different matter if there had recently been an exhausting illness.

Mr. A. E. LYNAM said he was himself especially keen on prevention, and would welcome advice from the Association on this head. When a child was likely to need an operation he thought the parents ought always to be consulted. The matron was

often given too much power, and she needed to be looked after. The headmaster should ask the advice of the doctor on medical matters, and the matron should carry out instructions.

Dr. R. E. SMITH (Rugby School) spoke of the steadily decreasing death-rates following on the more routine performance of necessary operations—e.g., for acute appendicitis. It was now the rarest occurrence for a boy operated upon for appendicitis to die. As to acute mastoid disease, this tested judgment more than any other condition met with in school work. He had had only one case of it at Rugby in the last five years. Many tender mastoids did not need opening, and mere earache without bulging and a definite rise of temperature did not call for operation. Prevention was largely a matter of efficient ventilation, and many preparatory schools were altered private houses. His view was that the sooner the population of the schools had the childhood infectious diseases the better for them, as they were in a condition to stand them better when young, and acquired a gradual immunity which lessened the total incidence of the serious disease.

Dr. J. LAMBERT (Wellington College) hoped it was realised that school doctors made determined efforts to get at the root foundations of diseases and the methods of their spread. Dormitories alone could not be blamed; boys mixed at games, in the library, and especially in the school chapel, and they did not take kindly to advice on personal hygiene. The school had to be regarded as a closed community. When boys with measles and influenza were warned of the danger of blowing their noses too hard, or of coughing vigorously, and were put on to inhalations of menthol or eucalytus, the ear complications at Wellington fell much below what was regarded as the average in other schools; he was surprised if he saw more than one mastoid case in two years. He did not practise early drum puncture for ear trouble; ensuring drainage would often result in quick subsidence. Much depended on the anatomical conformation of the particular ear.

Dr. J. A. H. BRINCKER said that in discussions on ear trouble following swimming it was assumed that the ears were normal, but many children had conditions that predisposed to otitis. In the absence of statistics no pronouncement on this danger was reliable. The type of school doctor which the Association was trying to develop was the one who would be of the greatest use to both pupil and headmaster. In past times the tendency had been too much in the direction of allowing the matron to decide when to send for the doctor. He reminded Mr. Lynam that the prevention of disease was a very difficult and complicated matter, and that the introduction of fresh individuals into the particular community might perpetuate an epidemic, however thorough were the measures taken.

NORTH-WESTERN TUBERCULOSIS ASSOCIATION

IN the course of a presidential address to this association in Manchester on Oct. 31st, Dr. PETER W. EDWARDS dealt with certain points he had found of definite value in the

Treatment of Adults Suffering from Pulmonary Tuberculosis

The days of super-alimentation had, he said, gone in the sanatoriums; but mothers, nurses, and some

doctors still thought it necessary to overburden the impoverished stomach and if over feeding at recognised meal-times was impossible there was a sequence of snacks. Patients arriving at a sanatorium were a sorry demonstration of the result of this routine. Three ample meals of a good all-round diet containing fats and salads sufficed and the patient's stomach wanted rest before, after, and between meals, particularly before. In winter a teaspoonful of cod-liver oil once a day was probably beneficial.

Much had been written about air, and unfortunate patients who should be in bed were encouraged to seek air in parks and there, muffled up, they sought air for their lungs denying it to the body and wearying themselves withall. At the sanatorium protection from the elements was encouraged, for it was never clear why a patient with feeble lungs could tolerate fierce elemental conditions. But this protection did not mean coddling or muffling. The body surface and not merely the patient's face wanted the air. It was somewhat devitalising and dangerous to have patients snug in bed—Central African conditions of warm humidity and stillness under the bedclothes and his face in good British climate. The patients should get accustomed to the minimum of bedclothes and it was possible in all months even in England to get rid of blankets, especially for an air-bath. Such patients on absolute rest might keep up good body tone. Akin to this was exposure to sun and this was encouraged not because of faith in the value of the sun's rays but because of the value of moving air. Properly conducted, sun exposure did no harm. Because of this faith patients should be out early in the day in all seasons and protected around mid-day in summer. In the grading of patients their first move from bed-grade should be "up from 7 to 9 A.M."

GENERAL REST

Rest was the chief treatment and no rest was as good as that obtained on the bed. Patients should be encouraged when back at work to return home to rest on their beds and away from the home folk who encouraged talking: surely talking was mighty hard work for damaged lungs. For a few years after leaving the sanatorium patients should retire by 8 P.M. and get up at 7 A.M. This long night was a fine tonic. Bed rest should be accompanied by silence; this combination gave general and local rest. He encouraged the use of sand bags, up to 9 lb. in weight on each side of the chest. This, in addition to increasing rest, gave the patient something to do—a fact of importance. Results of this treatment at the sanatorium in acute cases were usually astonishing.

Frank pulmonary tuberculosis of any severity was rarely improved by tuberculin. Certain proliferative cases benefited and it was estimated that 2 per cent. of patients at the Cheshire Joint Sanatorium were always treated by tuberculin. Sanoerysin and certain other gold preparations had proved of value, particularly in exudative cases and in recent spreads in the opposite lung in artificial pneumothorax.

In laryngeal tuberculosis, strict voice rest, granted the lungs were healing, seemed to be all that was necessary. For extreme pain the injection of alcohol into the superior laryngeal gave temporary relief and the removal of the nerve gave permanent relief. It was possible to do this bilaterally if an interval of some six weeks was allowed. Feeding by means of a stomach-tube was better than slow starvation,

and this method should be adopted if there was any hope. The actual cautery had a very limited sphere and ultra-violet radiation locally probably none at all. The treatment was control of the lung, general exposure to air, and voice rest.

A development of note in treatment had been the colony. The spirit of enterprise and hope, the absence of the rush of ordinary industry coupled with the knowledge that medical observation was direct and regular produced good results. The colony—a place for prolonged treatment for some, for training for others, and possibly permanent settlement—had not been appreciated as yet by the community. The cottage scheme introduced by Dr. Dan Powell for the training of patients in domestic sciences was an excellent advance; it could and should be available in all sanatoriums for females.

LOCAL REST

Efficient strapping was rarely seen and yet strapping properly applied was comfortable and brought a large measure of rest. It was as valuable in one-sided disease as it was in pleurisy.

Artificial pneumothorax was the greatest development in treatment and the day had come when it should be applied more generally. It was to be preferred over all other methods; it was available for one-sided cases and for bilateral cases, consecutively or simultaneously. It was poor practice to carry out artificial pneumothorax treatment without X ray control and film control was only half control. The fluoroscopic screen was the method of choice. Watch the diaphragm, it might be depressed, and look for fluid. Watch the opposite lung as disease sometimes spread rapidly. Watch the mediastinum for flop and hernia as the film would not usually show this. See if the collapse was hindered by adhesions and, if the screen did not give details, take a film of the hemithorax in expiration when the character of the collapse was in doubt and an ordinary film where there was suspicion about the contralateral. All artificial pneumothorax cases needed an X ray photograph as a routine at least every twelve weeks.

Do not aim at compression in artificial pneumothorax, for healing occurred with relaxation and small peripheral collapse. Usually cavities disappeared without compression. The aim was a functional result—no sputum, no cavity, no pyrexia nor rapid pulse, and a good sedimentation-rate. The pretty picture of the lung compressed around the hilum was almost an anachronism and all cases should be selective—i.e., all cases should only have that degree of collapse compatible with a functional result.

Artificial pneumothorax cases frequently did badly because of bad mechanics. A cavity was seen and higher pressure prescribed, yet the mediastinum was already flopping and herniating. This herniation and flopping of mediastinum was a defect of the mediastinum, even as a femoral hernia was a defect of the femoral canal. It was seen with negative pressures and the treatment was twofold—phrenic evulsion or paraffin and gomenol. In all cases the mediastinum should be stiffened by giving 2 c.cm. of paraffin-gomenol; wait until the usual reaction was over and then in three days 5 c.cm. and in another few days 20 c.cm. It was not necessary to try to put the oil on the mediastinum; put it in the pleural cavity and it would stiffen up the mediastinum in a fortnight.

Keep an eye on the fluid and remove before it did damage. To assert that cases with fluid did as well as those without was inaccurate; the comparison

was between cases where fluid was allowed to remain and where fluid was removed. Many fluids would be found to have tubercle bacilli, and tuberculous empyemata were not as dangerous as was commonly supposed. A rapid method of irrigating the pleural cavity was essential, a vacuum being rapidly produced by a water pump, and Carrel-Dakin solution, acriflavine, weak methylene-blue, or paraffin-gomenol used for disinfecting. Each had its value but Carrel-Dakin must not be used in the presence of pneumopulmonary fistula.

On the continent there was a vogue for cauterising adhesions and much pretty work was done. It was assumed that on completion of an artificial pneumothorax recrudescence occurred around adhesion. Experience in this country did not confirm this assumption. Adhesions that interfered with functional results must be dealt with by severing, by phrenic evulsion, by a combination of both, or by thoracoplasty. Of the various thoracoscopes, the Gullbring instrument of the Uveright type was excellent. Cauterisation was tedious and not free from danger. The mere existence of adhesions was no justification for interference; but a cavity held out by adhesion three to six months after induction called for treatment. Phrenic evulsion should be the first line of attack and thereafter cauterisation necessary.

Phrenic evulsion as a sole procedure had only slight value. Unless artificial pneumothorax was performed for minimal disease—a procedure not to be recommended—phrenic evulsion should be performed to spread out refills and to control cavities. The operation could be performed through a small incision and did not disfigure. Some had given it up because of alleged dangers and surgeons did not like to have phrenic evulsion done before a possible thoracoplasty. But phrenic evulsion with artificial pneumothorax gave much better results than artificial pneumothorax alone.

Double artificial pneumothorax obviously would not give the results claimed in artificial pneumothorax for unilateral disease, but it had its victories.

Scalenectomy appeared to be futile; in 31 cases done at the Cheshire Joint Sanatorium in 1932 the results justified the abandoning of the operation. Apicolysis also had not been a success in their cases though better selection and newer technique might give better results. Thoracoplasty—complete or partial—was an operation to be grateful for; but its sphere of usefulness with the cases seen at the Cheshire Joint Sanatorium had not been large.

HUNTERIAN SOCIETY

A PUBLIC debate, organised by this society took place at Cutlers' Hall on Monday last on the motion
That Birth Control is Unnecessary in Modern Life

THE BISHOP OF ST. ALBANS said he was wholly opposed to birth prevention by artificial means. He had a very strong intuitive sense that the whole thing was repellant and, in the truest sense, unnatural. There was no argument in favour of regarding it as wrong; but in moral judgments the intuitive sense could not be ignored, especially when it was shared by a large number of people. Birth control was against the teaching of at least three great religions: Jewish, Christian, Mohammedan. It was unnatural because it set out to frustrate the biological ends of

Nature; moreover, the means were antisocial and antipatriotic. He was told that birth prevention was intended to meet the changed conditions of the world. What were those changed conditions? Were they slums? Then clear the slums. If poverty, why have poverty? It was a scandal to allow human beings to live under conditions which no breeder of thoroughbreds would tolerate for his animals. There was now much laxity in sex relationships, but to call this "changed conditions" was the worst form of defeatism; it was wrong to sit down under conditions which could be changed for the better. A good deal was said about hard cases in justification of birth prevention, and no one could have followed his profession for 39 years without meeting with hundreds of them. But what advice was to be given to a husband or a wife whose partner might be condemned to practical celibacy owing to the state of health of the marital mate? Would husband or wife be advised to go elsewhere for satisfaction? Ultimately, he was convinced, it would be imperative to go back to the only safe method, self-control. Why did a distinguished member of the medical profession move, in the House of Lords, for legislation restricting the sale and advertisement of contraceptives if, as was alleged, they were the gift of God and of science for the betterment of humanity? If there was danger the public should be told; but if there was no danger, why restrict the sale of contraceptives? Large families afforded the best kind of education; but if, on the other hand, one played with Nature, she had a nasty way of getting back on one in the end.

Dr. C. P. BLACKER asked whether those who opposed contraception expected people to practise abstinence? As a universal principle it was acknowledged that abstinence was impossible. Information had been obtained from 979 women as to their usual frequency of coitus: 2 per cent. indulged more than once a day, 7.6 per cent. once a day, 31.3 per cent. more than twice a week, and 40 per cent. once or twice a week. In the speaker's own practice, only six practised abstinence from coitus, out of several thousands. He believed that birth control was abused by many in this and other countries; yet it could at the same time be necessary. Civilisation had now passed from the phase of unplanned parenthood, and no one ought to try to induce women to have children if they did not want them.

Dr. HALLIDAY SUTHERLAND, commenting on statistics, said that women who consulted gynaecologists and psychiatrists were not normal, and this debate was concerned with the mass of the population. Obviously some form of control was necessary in life; it was the essential difference between man and the animals that the former could exert self-control. Was it implied that nobody could do without the sexual act, even for a limited period? Was it impossible for a married man to practise continence for 12 days in each month? After a child was born the mother should have no sexual intercourse for three months; was the husband to go elsewhere during that time? Apart from pregnancy, the act of coitus imparted to the woman valuable hormones. If the "safe period" was to be really safe it must be observed to the hour. The safest way of all was to maintain the practice of self-discipline. He would be a bold doctor who would ignore all this tampering with the natural course of Nature as an element in the too-high maternal death-rate.

Dr. E. R. T. CLARKSON insisted on the importance of thorough and conscientious study of this, or any

subject, before essaying to give advice and leading. Many gave advice on this matter who had no acquaintance with the cognate sciences, yet it was one of really vital importance to the nation, and all nations. Religious, ethical, and moral considerations were involved as well as sociological.

Sir WALTER LANGDON-BROWN said the Bishop had not discussed whether birth control was necessary, but rather whether it was right. We were again under the shadow of war, which might spread, and an expressed purpose of that war was to find room for the increasing millions of people of a country where birth control was ranked on the side of banditry in the penal code. The Bishop's chief point was that he disliked the methods of birth control, but Sir Walter would prefer to rely on reason than on intuition. If it was asked what ends it hoped to achieve by birth control, he would answer: life and health, so that a woman may space out her family according to her wishes and her means, so ensuring that the children will be brought up in good conditions. In early days it was looked upon as simply the ordinary course that a woman who gave birth to eight or nine children lost two or three early in life; but nowadays to lose a child was regarded as a calamity. Sir Walter gave instances of wives of labourers out of work with five or more children to keep, and urged that birth control for such was a pressing necessity. The object of marriage was mutual consolation and the enrichment of life; there was a great deal in it besides reproduction: out of instinct it was possible to build up something possessing high spiritual value. Because birth control was abused, however, it was the desire of the medical profession that it should not go uncontrolled. He agreed that abstinence was an impossible doctrine; celibacy was admittedly possible, but married celibacy was worst of all.

The Rev. Father MAGUIRE said that the Ten Commandments had raised woman to her present position, but the preaching and carrying out of birth control would degrade her lower than in pagan times.—Mr. WILLIAM IBBOTSON thought one should be no more ashamed to confess being hungry for love than being hungry for food. The former resulted in that priceless sovereignty the baby. Health was essential to perfect happiness, and health could be maintained only by adherence to primitive laws. We should not sacrifice our idealism on the altar of convenience.—Dr. KENNETH DICKSON said that most of the opponents of birth control based their position on religious rather than on scientific bases.—Dr. F. J. BENJAMIN also held that the ethical objections to birth control did not stand logical analysis. Birth control was certainly necessary among the poor; its use did not mean that the people concerned were licentious.

Other speakers followed, and the openers replied.

POST-GRADUATE COURSES IN BERLIN.—International courses are to be held in Berlin on the following subjects: internal medicine (Feb. 24th to March 4th), syphilis of the internal organs (March 5th to 7th), tuberculosis (March 16th to 21st), obstetrics and gynaecology (March 23rd to 28th), radiology (April 9th to 14th), abdominal surgery (April 20th to 25th), homeopathy (April 20th to May 16th). Courses in all the special departments including practical work will also be held. Particulars of all these courses may be had from the information bureau of the Kaiserin Friedrich-Haus, Robert-Koch-Platz 7, Berlin N.W.7.

REVIEWS AND NOTICES OF BOOKS

The Biology of the Individual

Edited by J. RAMSEY HUNT, M.D., THOMAS K. DAVIS, M.D., and ANGUS M. FRANTZ, M.D. Baltimore: The Williams and Wilkins Company. Pp. 323. 27s.

THIS is the fourteenth of the series of yearly publications by the Association for Research in Nervous and Mental Disease. It opens with a historical paper by Dr. Smith Ely Jelliffe, learned in range, followed by Dr. Charles B. Davenport's chapter on body-build and its inheritance, which is meagre but informative. The relation of morphological form to reflex action and behaviour is discussed on the basis of his own investigations on dogs by Dr. William T. James; a more useful paper is that of Mr. T. Wingate Todd on the progress of physical maturity and mental expansion in children. Prof. Arnold Gesell's contribution on the ontogenetic patterning of infant behaviour gives a very brief account of some of his brilliant work at the Clinic of Child Development at Yale. A lucid survey of the relation between constitution and internal medicine by Prof. Levellys F. Barker is followed by a detailed account of endocrine aspects of constitution by Dr. Walter Timine. Biochemical aspects are reviewed by Dr. Max Goldzieher. Prof. Eugen Kahn gives a critical survey of the formulation by Kretschmer and others of the constitutional features of personality types. One of these, the eidetic, is dealt with at more length by Dr. Heinrich Klüver.

Prof. Macfie Campbell's balanced statement of the relation between personality and psychosis introduces the more psychiatric part of the volume. Special studies made in this field are reported by Dr. Karl M. Bowman from the Boston Psychopathic Hospital, and by Dr. R. G. Hoskins and Dr. E. Morton Jellinek from the Worcester State Hospital. Prof. Allport's presentation of the relation between individuals and their human environment is appropriately followed by Dr. William Healy's temperate consideration of delinquency as an individual problem. An airy, loosely written paper by Dr. Paul Schilder on personality in the light of psycho-analysis, a note on handwriting and the Rorschach test in relation to personality by Dr. Oskar Diethelm, and a report of investigations into sexual development by Dr. George W. Henry conclude the book. Reports of the discussions that followed each paper when it was read are included, but only in a few instances is a list of references to the literature of the various topics appended.

An Introduction to General Therapeutics

By H. K. FRY, D.S.O., B.Sc., M.D. Adel., B.Sc., D.P.H. Oxon., Lecturer in Materia Medica and Therapeutics in the University of Adelaide. London: Cassell and Co., Ltd. 1935. Pp. 223. 6s.

UNDER this title, borne by a very small book obviously written for junior students, one might expect a simple presentation of the principles of therapeutics, illustrated by common examples. In the preface, however, the author says that he aims at a concise survey of modern methods of treatment, dealing with the principles underlying their use, and their possibilities and limitations in practice. The book is consequently disappointing; for it attempts too much in too little space. Such principles as appear in it are set forth too baldly, and without adequate

illustration. Long stretches of it are dry statements about the uses of drugs, and there is scarcely even room for mention of the evidence on which a statement is based. The field is not confined, of course, to drugs and chemical preparations, but ranges over endocrine treatment, immunology, dietetics, physiotherapy, psychotherapy, and climatology. The result is an agglomeration of facts, to be accepted as such on the author's authority; they may help to fill the storehouse of the inquisitive student's mind, but so set forth they do nothing towards stimulating his thought, or training his critical faculty. Teachers do not get the best out of their students in this way.

The Autonomic Nervous System

By JAMES C. WHITE, M.D., Assistant Professor and Tutor in Surgery, Harvard Medical School; Assistant Visiting Surgeon, Massachusetts General Hospital, Boston. London: Henry Kimpton. 1935. Pp. 386. 30s.

THIS is the most comprehensive review of the surgery of the autonomic system which has yet appeared in English. Since it has been written by a clinician of wide experience, who is endowed with a well-developed critical faculty, the book will be a great help to every practitioner who wants to know what surgery can achieve under certain stated circumstances. It is clear, for instance, that Dr. White's experience leads him to place little confidence in sympathectomy for asthma and epilepsy; and he does not hesitate to state, when referring to thromboangiitis obliterans, his own rather gloomy views in contrast with the more favourable opinions expressed by other surgeons.

Dr. White's work has been based upon the most recent discoveries of physiology, and has been controlled by the careful application of exact methods of clinical examination. It is therefore fitting that the first part of his book should be devoted to the anatomy and physiology of the autonomic system and to a description of the apparatus and methods employed for studying patients before and after operation. The reader will appreciate the care which has been taken to exclude unnecessary detail, and he will be struck by the extensive and ingenious use which is made of novocain to block autonomic nerve impulses. The second part is devoted to the consideration of the various conditions in which it is possible to modify the function of the affected organs by destruction of their nerve-supply, and the author has been careful to discriminate between the conditions which react favourably to operation and those for which sympathectomy has been performed with little justification and a correspondingly small degree of success. The importance in prognosis of the severity of various diseases under consideration has not, however, been sufficiently stressed, and the explanation offered for the unsatisfactory results in some cases of Raynaud's disease is unconvincing. The suggestion is that destruction of post-ganglionic fibres renders the denervated vessels supersensitive to circulating adrenaline; yet later on recurrent attacks of vasospasm are attributed to the excision of an inadequate number of ganglia.

The last section of the book deals with technique and gives a concise description of the various methods of surgical approach and of alcohol injection which are now employed for sympathetic denervation. The

accompanying drawings are all clear, with the exception of those illustrating the posterior approach to the cervico-thoracic ganglia, which seem to be upside down. The final chapter describes peripheral sympathectomy by crushing the mixed nerves in the lower extremity, a procedure, introduced by Dr. White and his colleague Dr. R. H. Smithwick, which constitutes a notable advance in the treatment of Buerger's disease. The value of the book is greatly enhanced by an extensive but well-selected bibliography.

Tumeurs de l'encéphale

By D. PAULIAN. Preface by Dr. CLOVIS VINCENT. Paris: Masson and Co. 1935. Pp. 216. Fr.30.

It is difficult to discover in what way the study of brain tumours is advanced by this monograph. It is a collection of notes relating to 46 oddly assorted cases of glioma, meningioma, neuroma, secondary carcinoma and tuberculoma, all of which, with one exception, appear to have come to necropsy. The notes in general are too limited to be of guidance either to clinician or pathologist. When the variety of the material is considered it is perhaps hardly surprising that there is little attempt to discuss in a general way the experience gained. There can be little doubt that more is to be learnt of cerebral tumours from the careful description and discussion of a small group of cases selected from a large quantity of material than from uncritical reports of a far larger number of consecutive cases. Considerable emphasis is laid upon the importance of ventriculography in the diagnosis of intracranial tumours, and a chapter is devoted to the description and discussion of this procedure. The author lays himself open to a suspicion of insufficient experience in stating (p. 139) that tumours of the hypophyseal region are rare, and (p. 36) that the type of secondary carcinoma most frequently encountered in the brain is that derived from chorion carcinoma. There are many inaccuracies in the spelling, references, and the names and nationalities of authors. The poor quality of the many illustrations is probably to some extent attributable to the printing.

Diseases of the Nervous System

Sixth edition. By S. E. JELLIFFE, M.D., Ph.D., formerly Professor of Psychiatry, Fordham University, New York; and W. A. WHITE, M.D., Superintendent of St. Elizabeth's Hospital, Washington. London: H. K. Lewis and Co., Ltd. 1935. Pp. 1175. 42s.

THIS edition is arranged on the same general lines as its predecessors. About two-thirds of the book is devoted to organic diseases of the nervous system and the remaining third to the neuroses and psychoses, in which epilepsy is included. The authors state that they have undertaken to include as far as possible all important contributions of sufficient weight which have been made since the last edition. The book suffers severely from an attempt to cover too much ground, and a resulting lack of proportion. Nearly half the section concerned with organic diseases is devoted to methods of examination, vegetative and visceral neurology, and the endocrinopathies. The inclusion in these sections of blood syndromes, achondroplasia, myxedema, cretinism, and Addison's disease occupies space which might have been used to better advantage, for a number

of important neurological topics are inadequately treated. Compression of the spinal cord including spinal tumour receives four pages, less than the space allotted to diseases of the suprarenal bodies. Intracranial aneurysm is only briefly mentioned, and the clinical picture of subarachnoid hæmorrhage is not described. Subacute combined degeneration is not clearly differentiated from a motley group of "combined scleroses." In a book of more than 1100 pages the radiographic diagnosis of intracranial tumour receives only six words. Treatment is not described in sufficient detail, except the treatment of neurosyphilis. It is mainly in the realm of recent developments in neurology that the shortcomings of the book are to be found. Much of the older material attains a high standard. The historical background is valuable; the references and footnotes are well chosen; the illustrations, except for the absence of radiograms, are excellent; and the printing and format leave nothing to be desired. Both the student and the practitioner of neurology, however, have a right to expect that a new edition of an important text-book shall be thoroughly up to date.

John Bellers

Quaker, Economist, and Social Reformer. By A. RUTH FRX. London: Cassell and Co., Ltd. 1935. Pp. 174. 6s.

THE advances in public health made by Chadwick, Southwood Smith, and Simon during the first sixty years of the last century were so remarkable that they obscured for some time what was achieved by earlier workers in the same field, the value of whose work is now becoming more fully appreciated. Sir George Newman has shown what we owe to Haygarth, White, and other clinicians in the eighteenth century, who by their writings and practice did much to further the progress of preventive medicine; and in this book Miss Fry introduces us to an earlier pioneer. John Bellers was not a medical man but a successful cloth merchant, and health reform was only one of his many public activities. His first scheme was to set up a number of industrial communities for the education and employment of the poor, and the pamphlet in which he set it out won the commendation of Robert Owen, who reprinted it in 1818, and of Karl Marx, who described the author as "a veritable phenomenon in the history of political economy."

But Bellers has a special claim to our attention now. He studied the Bills of Mortality, from which he computed that 100,000 persons died annually "of curable diseases for want of timely advice and suitable medicines"; and he thought that since three-quarters of the population were too poor to procure either the State should provide what was necessary. He recommended the building of hospitals, the appointment of sufficient doctors for the domiciliary care of the sick poor, the encouragement of research, and special steps to secure the wide distribution amongst the medical profession of available knowledge of health and disease. He thought that the State should send out doctors to the East and West Indies in search of remedies, and that all ships' surgeons should be encouraged by suitable rewards "to make what useful discoveries they can in every country they come to." He attached importance to the keeping of clinical records, and thought that an autopsy should be made in the case of every patient dying in hospital. He aimed at a high standard of medical education in this country, "which may

prevent many from travelling to foreign hospitals to learn, when they shall be capable of doing it better at home." While he considered health problems from the point of view of cure rather than prevention, he was modern in his demand that the State should assume responsibility for promoting medical research and for providing adequate treatment.

Altogether Bellers was an interesting man, and Miss Fry has done well to tell us what is known of his life and to give sufficient extracts from his writings to establish her claim that he was a notable pioneer in social reform.

Introduction à la chirurgie thoracique

By E. E. LAUWERS. Paris: Masson et Cie. 1935. Pp. 112. Fr.20.

THE object of this book is to provide a concise account of the present position of thoracic surgery suitable for the student or graduate without extensive previous knowledge of the subject. Artificial pneumothorax is advocated if one month's rest fails to bring down the temperature and is also considered essential if relapse occurs after one period of sanatorium treatment. Adhesions should not be divided during the first six months of pneumothorax treatment. Thick-walled cavities when dry require no treatment; when sputum is present they always require closure by surgical methods, artificial pneumothorax being useless either because collapse is prevented by massive adhesions or because the fibrous shell of the cavity resists pressure. To be readable a book of this kind can hardly avoid being dogmatic and the author must be excused when, in expressing a general truth, he overlooks numerous exceptions. The absence of any illustrations is regrettable.

Nouveau traité de médecine

Fascicule XX. Pathologie du Système Nerveux. Published under the direction of Profs. G. H. ROGER, F. VIDAL, and P. J. TEISSIER. Paris: Masson and Co. 1935. Pp. 984. Fr.130.

THIS volume, a member of a well-known and valued series, is devoted to the pathological anatomy of the brain stem, cranial nerves, meninges, and spinal cord, other parts of the nervous system having been dealt with in the two preceding volumes. Famous French neurologists are amongst the contributors: thus G. Guillaumin and Th. Alajouanine provide sections on the mesencephalon, pons, and medulla; J. Froment on the cranial nerves; while J. A. Sicard and J. Huguénau, A. Léri, J. Thiers, J. A. Lièvre, O. Crouzon, and Ch. Chatelin are responsible for other sections. The title of the work is somewhat misleading. It is not primarily a treatise on pathological histology; the contributors are rather less concerned with the actual morbid processes at work than with the effects produced upon the patient. This is a book essentially of syndromes, and the anatomy of the changes that are correlated with such syndromes is described with a profusion of illustrations that are as much clinical as anatomical. This is particularly true of the first half of the text which is concerned with the brain stem. This section in particular will appeal to the clinical neurologist who is engaged in the analysis of lesions in this situation.

For the pathologist the parts dealing with the meninges and spinal cord will prove more attractive, including, as they do, descriptions of conditions that are little known and little understood, such as hæmato-

myelia and the various degenerations of the spinal cord. The omission of any reference to recent work on the aetiology of pernicious anæmia or to the possible rôle of vitamin deficiency in relation to these spinal cord degenerations is, however, disappointing. The description (p. 411) of Tay-Sachs's disease as a degenerative condition of the ganglion cells of unknown origin ignores the widely accepted view that this disease is a metabolic disturbance closely allied to Niemann-Pick's disease, in which there is a storage of lipoids in the ganglion and glial cells of the central nervous system, as well as in other tissues. Defects of this order weigh lightly against the value of the work as a book of reference correlating anatomy with clinical neurology.

Handbook of Physiology

Thirty-fourth edition. By the late W. D. HALLIBURTON, M.D., F.R.C.P., F.R.S., formerly Professor of Physiology, University of London, King's College; and R. J. S. McDOWALL, M.B., D.Sc., F.R.C.P. Edin., Professor of Physiology, University of London, King's College. London: John Murray. 1935. Pp. 971. 18s.

THE general features of this book are unchanged in this edition which is not, however, simply a reprint of the previous one, for verbal alterations have been made throughout in the interests of clarity, a few figures have been changed, several paragraphs have been abbreviated to allow the insertion of new matter, and two or three sections have been rewritten. Although the pagination is the same as before, it may fairly be said that the book has been brought up to date. The preface to this volume is liable to mislead those unfamiliar with the recent development of work, since it is almost identical with that of the thirty-third edition, the same reference being made to new features and to the almost complete rewriting of the book in the "last three editions." The index is excellent, being much more exhaustive than is usually found in a volume of this size. The book will continue to appeal to those who require a short, readable, fairly complete but not too advanced account of the subject as a preliminary to the study of medicine.

Tuberculosis of the Lymphatic System

By RICHARD H. MILLER, M.D., F.A.C.S., Assistant Professor of Surgery, Harvard Medical School; Associate Surgeon, Massachusetts General Hospital. New York: The Macmillan Company; London: Macmillan and Co. Pp. 248. 17s.

Dr. Miller gives in this monograph a straightforward account of tuberculosis as it affects the lymphatic glands. In America, as in this country, tuberculosis in this site is becoming much less common; but this cannot be attributed to any great advance in treatment, which indeed has remained almost stationary during the last thirty years. The absence of real progress in therapeutics is revealed in most of the chapters of this book. The remarks on the unsatisfactory results of tuberculin and the uncertainty of cure by the operative removal of cervical glands are in accordance with the experience of most surgeons, but it is depressing to learn that in the author's experience the same uncertainty and unreliability applies to the use of X rays. More information might have been given in the chapter on abdominal tuberculosis, but in general the book impresses the reader with the sanity of its outlook.

THE LANCET

LONDON: SATURDAY, NOVEMBER 23, 1935

TEACHING OF MEDICAL PSYCHOLOGY

FOR a long time, to all intents and purposes, the field of psychological medicine has been divided into two. The need for institutional care seemed to separate sharply the insane from the sane, the psychotic from the neurotic; and administrative and traditional usage caused a parallel cleavage in medical work: the "asylum doctor" or alienist cared for the lunatic, while the general physician treated—or disdained to treat—the sufferers from "nerves." Some of the latter patients passed into the hands of the neurologist when diseases of the nervous system became a differentiated specialty. The doctors in each group saw little of the illnesses complementary to those they were familiar with; their views about the whole subject were correspondingly partial, and were all the more tenaciously held because they were the outcome of intense but narrow experience. This state of affairs has changed since the war in that the neurologist has had to cede much of his territory to the psychotherapist. But the general line of division is still commonly drawn between those who work in mental hospitals and those whose contact with mental disorder is in the consulting-room, the out-patient department, or the wards of the general hospital. Each group shows misunderstanding of the other's position, tends to belittle its competence in the subject as a whole, and would be reluctant to entrust to it the teaching of psychological medicine.

This last is an immediate issue; for the teaching of psychological medicine as a whole is becoming more and more plainly a necessary part of medical education. To split it under the two heads—insanity and the psychotherapy of neuroses—would be justifiable only if there were no teachers with knowledge of the whole field, or, on the other hand, if one believed that disturbances in psychic life are due to a different order of causes, call for different principles of treatment, and exemplify quite different laws of normal and morbid function according to whether or not they affect conduct to the point of social and suicidal risk. Neither of these conditions prevails; fully equipped teachers are available, and psychological medicine is essentially a single subject. The dichotomous view of mental illness is no longer held by those

who have had equal experience of both the "neuroses" and "psychoses." Psychiatry, as Prof. ADOLF MEYER has often pointed out,¹ is the "study and treatment of all abnormal conditions in which are involved man's behaviour and mentation"; hysteria and anxiety are as much included in it as melancholia and dementia præcox; and it will be taught best by those who have the widest experience. But although such teachers are available, there is still dispute about what they should teach. It is also questioned whether complete teaching should not be reserved for post-graduate students.

Dr. T. A. Ross's Morison lectures to the Royal College of Physicians of Edinburgh now published in full² form a helpful contribution to the problem. Dr. Ross is pre-eminent among that section of psychiatrists who are almost exclusively occupied in psychotherapy. He has had exceptional opportunities for judging the value of the psychological theories that may be applied to the treatment and understanding of neurotic illness, and though in these lectures he naturally refrains from dealing with the teaching of the forms and treatment of the grosser mental disorders, he puts forward cogently the very definite opinions he has come to hold about the teaching of medical psychology. With a plain vigour of statement corresponding to the outrightness of his views, he explains his reasons for having "thrown the Freudians and the semi-Freudians overboard as teachers of students," and his grounds of complaint against the doctors trained only in mental hospitals—to whom he restricts the term "psychiatrist." Those who would most dissent from his desire to sunder psychotherapy from other branches of psychological medicine would be the readiest to accept his very weighty plea for the teaching of the "great mass of psychological knowledge on which we are all agreed"; and, he adds, "by 'we all' I mean all intelligent people, not only psychologists." An elementary psychology, avoiding the dubieties and conjectures of the warring schools, is ready to hand and would be what in some schools it has already become—an invaluable part of medical training. Dr. Ross believes strongly that much of the treatment of the neuroses can and should be done by the general practitioner, and would have him learn about it from the physicians and surgeons in the wards, by way of history-taking and discussion of the patient's difficulties, rather than from a specialist. For a long time to come this can be only a pious hope. Dr. Ross perhaps under-estimates the special knowledge and technique which he has acquired and of which he offers in these lectures so simple a presentation. On such controversial matters, however, his experience and refreshing directness make his views very welcome at a time when the education of the medical student is being amplified on the psychological side, and when some would like to give it a very decided twist in this direction.

¹ See THE LANCET, 1934, i, 31.

² Ross, T. A.: The Teaching of the Neuroses to Medical Students, Edin. Med. Jour., 1935, xlii., 445.

TREATMENT OF CANCER OF THE LARYNX

OWING to the absence of efferent lymphatics from the interior of the larynx, intrinsic cancer, which is nearly always epithelioma originating on the vocal cord, remains for a long time a strictly local process, and as such yields to treatment a higher proportion of cures than does visceral cancer elsewhere in the body. A further reason for this favourable result is the possibility of early diagnosis; for the lesion, being on the surface, is easily visible by means of a mirror, and produces the obvious symptom of hoarseness at a very early stage. It cannot, therefore, be too often repeated that any patient who is hoarse for more than a few weeks must have the larynx inspected by a competent observer. Provided that the growth is still amenable to complete excision by laryngo-fissure, 70-80 per cent. of cures can be obtained. Prof. CHEVALIER JACKSON, who with his son Prof. CHEVALIER L. JACKSON contributes to a symposium on the present-day treatment of malignant tumours,¹ claims 82 per cent. of cures in these cases, and describes a valuable modification of technique. This modification is especially suitable for cases in which the anterior commissure is involved, and brings within range of removal by laryngo-fissure a number of lesions which have been considered suitable only for laryngectomy. It consists in dividing the thyroid cartilage in the middle line without penetrating the internal perichondrium, preferably by means of an electrically driven circular saw. The perichondrium is then elevated as far back as necessary, first on the side least affected, and the growth is excised in one piece with a wide surrounding area of normal tissue. The extent and situation of the excision has to be guided by previous careful study of the appearances, since the interior of the larynx is not visible at this stage of the operation.

The selection of cases for surgery has been modified of late years by a great improvement in the results obtained with radium and X rays, and at the same time assessment of the malignancy of these tumours has been made more exact by Broders's classification into four types, of which the more malignant, though less successfully treated by surgery, are more amenable to radiation. The choice of operation depends on three factors—the site of the growth, the extent of the lesion, and the degree of malignancy. Laryngo-fissure is advisable in early intrinsic cancer of small extent, limited to the vocal cord; but extension to the anterior commissure is not a contra-indication, more especially when Jackson's modified operation is used. The same, however, cannot be said of extension posteriorly; when the growth has reached the posterior commissure leakage down the party wall between the pharynx and the larynx is rapid, and even laryngectomy yields poor results. Again, when the growth has extended upwards to involve the aryepiglottic folds or the base of the epiglottis, it is to be regarded as extrinsic and suitable only for laryngectomy.

In cases, then, which are strictly intrinsic, all four of Broders's types of malignancy are curable by laryngo-fissure, provided that the lesion is small. If it is large, and of type 3 or 4, a laryngectomy ought to be performed. When the aryepiglottic fold is involved, laryngectomy is justifiable in types 1 and 2, but Coutard's deep X ray therapy is better in types 3 and 4. Laryngectomy, therefore, should be done where an intrinsic cancer has extended so far posteriorly that there is a probability that laryngo-fissure will be inadequate, especially if of type 3 or 4, and in extrinsic disease of limited extent if of type 1 or 2; but if the extrinsic growth is extensive, or (if limited) of type 3 or 4, radiation is preferable to any operation. It will be noticed that JACKSON makes no mention of the method of treatment of intrinsic cancer by radium applied by fenestration of the thyroid cartilage, which has been successfully developed in this country by DOUGLAS HARMER, and which is perhaps more satisfactory than removal by laryngo-fissure when the lesion is rather extensive and especially when it is of type 3 or 4 of malignancy.

To recapitulate, in Prof. JACKSON's view laryngo-fissure is the treatment of choice for strictly intrinsic growths even if they are spreading to the anterior commissure, and for lesions which have involved the anterior wall of the arytenoid eminence if of types 1 and 2. Laryngectomy is indicated when the growth has reached the arytenoid if it is of type 3 or 4, and for limited extrinsic growths of types 1 and 2. For all extrinsic tumours of types 3 and 4, and for more extensive extrinsic tumours of any type, radiation is preferable to operation of any kind.

CHARLATANISM

QUACKERY is undoubtedly flourishing. In some European countries it is steadily increasing. Dr. WASSERBERG in an admirable essay¹ defines the charlatan or quack as "a person who engages in the treatment of the sick without possessing the requisite State authorisation for the purpose." In the United States the evil consequences of the wholesale freedom to treat the sick led to the passing of various laws against quackery, but whereas in Europe there are only two classes of "healer," the qualified doctor and the quack, in the United States a third class is recognised—namely, those with "limited licences" which comprises osteopaths, chiropractors, and numerous other healing cults. Dr. WASSERBERG dubs all these quacks, though, strictly speaking, they do not fall within the limits of his definition, being to some extent State-authorised healers.

Most countries prohibit quackery by law, but England and Germany are notable exceptions. In England, toleration of quackery is ancient and traditional; in Germany, it is comparatively recent, and the legalisation of quackery was actually supported in 1870 by VIRCHOW, LANGENBECK, and other men of liberal ideas who argued

¹ Amer. Jour. Surg., 1935, xxx., 3.

¹ League of Nations: Quarterly Bulletin of the Health Organisation, September, 1935, p. 555.

that "the State was not entitled to grant the prerogative of treatment to any one class or to limit the citizen's freedom to seek advice and help where he chose." As a political gesture, the monopoly of the medical profession to treat the sick was abolished in France and Russia during the revolutions of 1792 and 1922 respectively. In both cases however it was speedily restored, for it was found to safeguard the interests of the State rather than those merely of the medical profession. Latterly there has been a steady curtailment of the quack's legal rights both in England and Germany. It must be admitted that whether quackery is legally accepted or not in any given country does not seem to influence the number of quacks practising in that country. They flourish, for example, just as much in France, where quackery is illegal, as in England, where it is not. Moreover quacks, like doctors, are found in proportionately greater numbers in towns than in rural areas, whence it follows that quackery does not in any measure depend for its existence on a scarcity of doctors. An inquiry concerning 1301 quacks in Berlin brought to light some interesting facts. It was found that a considerable proportion of them had had no more than an elementary school education. Nearly three quarters of them were over 40 years old, an observation suggesting that they had probably tried some other career first. The men outnumbered the women in the ratio of about two to one. Many of these charlatans of both sexes were drawn from the auxiliary medical services; for which, says Dr. WASSERBERG, the medical profession is to be blamed, in too lightly entrusting such persons with responsible therapeutic tasks and so giving them undue confidence in their ability to treat the sick. Post-war unemployment must also have encouraged many to take up quackery as a means of livelihood, but although the desire to make money may be the strongest, it is not the only incentive to quackery as a career. Other strong motives are a desire to rise in the social scale, or a fanatical faith in some system of healing leading to the founding of new cults. Nevertheless the financial allurements must rank first. It is estimated that, in England alone, the money spent in fees to quacks would endow 40,000 hospital beds. Quackery is undoubtedly "big business," and the quack knows how to sell his wares. Minor licence holders in the United States are taught salesmanship in their training curriculum, and the power of the press is recognised and used to good purpose. There are 150 quack periodicals in Germany alone.

It might be presumed that the quack's clientele is largely derived from the ignorant and illiterate, but in fact the reverse is true. Most of those who seek advice from quacks belong to the educated classes. It may therefore be interesting to inquire into why such persons go to the quack rather than to the doctor. The reasons are many, but some are obviously more important than others. Facile princeps, perhaps, is lack of therapeutic satisfaction. The intelligent layman often will not, or cannot, reconcile himself to the fact that

he may be suffering from an incurable disease. No matter how many "orthodox" doctors he may have consulted, he will not accept the inevitable. Something, he feels, must be done about it, and so he turns to the quack. Whether or no he benefits thereby does not ultimately matter so long as the hope of recovery is kept alive. To such a patient anything is preferable to the cautious and reasonable pessimism of the honest doctor. Another important factor leading to disharmony between patient and doctor may well be the impersonal and objective method of approach which is bred of a modern scientific training. The "test-tube" doctor may lack that psychological perception which would teach him constantly to realise and remember that patients think of disease in terms of symptoms. To the patient, a "serious" disease is one which makes him feel ill or cramps his activities. Whereas the doctor is apt to dismiss lightly and treat casually minor ailments which may, subjectively speaking, be anything but trivial, the quack is unlikely to make this mistake. His very lack of pathological knowledge compels him to think and treat symptomatically, and the fact that he and his patient both talk the language of popular medicine makes for mutual sympathy. And what of the therapeutic successes of the charlatan? These are often more apparent than real. "Cures" are frequently claimed for diseases diagnosed only by the quack himself and, in reality, non-existent. Transient improvement in spontaneously remittent diseases is also hailed as cure. In some cases of self-curing disease the quack usurps the credit which rightly belongs to the healing power of nature, but it is among the functional disorders and the *malades imaginaires* that the quack is really at his best. Few such patients can remain completely impervious to his compelling and irresponsible optimism.

Finally, who is to blame for the continued existence of the charlatan? It would probably be just to reply, the doctor rather than the patient. We may accuse the sick layman of a taste for magic, of drawing false conclusions, and of a post-hoc-propter-hoc habit of mind; but the fact remains, when all is said, that if our therapeutics and methods of handling the patient were better, the *raison d'être* for the quack would disappear from civilisation and, with it, the quack himself.

SLEEP AND SLEEPLESSNESS

WE should understand insomnia better if we knew more about normal sleep. We may note the fall in systolic blood pressure, the slowing of pulse and respiration, the increase in oxygen intake, the reduction in carbon dioxide output, and the lowering of the basal metabolic rate and body temperature. These changes, as W. R. HESS has pointed out,¹ are in the vegetative functions most intimately connected with physical and psychic activity. But they are merely accompaniments of sleep; we can find no physiological change that is constant and essential. In general

¹ THE LANCET, 1932, ii., 1259.

terms the state may be described as a dissociation which affects the cortical centres chiefly and leaves the lower functions relatively unimpaired. That the lower centres in fact retain much power of action is shown by the "automatic" movements of the somnambulist, of the soldier sleeping on the march, and of the long-distance athlete. More rarely we read of useful mental activities: COLERIDGE is said to have created *Kubla Khan* in his sleep and MILTON tells of—

My celestial patroness, who deigns
Her nightly visitations unimplored,
And dictates to me slumbering; or inspires
Easy my unpremeditated verse.

Such examples make it clear that sleep does not, as is often supposed, imply deep unconsciousness. Rather does it consist in general relaxation of functions, the suspension of all effort—even the effort to go to sleep. As a rule the cessation of response to stimuli is the result of fatigue, and fatigue comes on more rapidly with inefficient working of the body; hence we are prepared to find that the more lowly organised the constitution the more sleep is needed. The short periods of sleep of intellectual men have often been remarked. Yet sleep and fatigue are not so intimately and reciprocally related as to simplify the problem how we sleep at all. For fatigue is not a necessary antecedent, and if excessive will indeed inhibit sleep. We sleep not so much because we are tired as in order to avoid becoming so; and the regular periodicity of sleep in a healthy person is a means of ensuring anabolic recuperation not only through physical rest but also by the avoidance of nervous stimuli with a katabolic effect. The attempt to eliminate all such stimuli is seen in the usual ceremony of going to bed, which includes the habitual disregarding of unimportant or familiar sounds—from street or farmyard, for instance. Reception is highly selective: the exhausted mother may sleep through the loudest noises but wake instantly at the faintest sound from her sick child; the doctor may be roused by the movement of wires preceding the ringing of his night bell. By a similar development of selectivity a patient will wake each time the clock strikes, and despite a good night's rest assert in all truth that he has heard every hour. Dr. H. M. NORTH, in an Australian discussion lately reported,² asks if the converse may not be true. Can a series of functional elements be rested whilst the organism as a whole is awake? Does the harassed business man sleep as the eager golfer watches his ball go prettily down the fairway? This is a question with direct bearings on the rationale of several forms of therapy, such as the prescription of a change of scene or occupation.

In assessing the effects of insomnia there seems to be no justification for the not uncommon fear of insanity; though sleeplessness is a common initial symptom in the psychoses. Naturally the discernible effects of experimental insomnia in man are meagre, while in animals that are kept awake they are apt to be confused with those of

muscular exhaustion.³ Nevertheless, lack of sleep undoubtedly plays an evil part in many an illness. Alternatively the rhythm may be deranged, and it is interesting to find a new remedy now suggested for the intractable day-and-night reversal often seen in encephalitis lethargica—namely, superior thoracic ganglionectomy, with which Dr. N. D. ROYLE reports success.⁴ In treatment of ordinary insomnia the first consideration is of course the relief of such obvious causes as pain, cough, dyspepsia, pruritus, disorders of micturition, as well as frankly recognised emotional disturbances—all of which are comprehended in the term "extrinsic insomnia." Direct treatment is similarly required in disturbances of the cerebral circulation, such as anaemia, vascular hypertension and hypotension, and cardiac decompensation. But often in practice the patient's needs have ultimately to be met by the skilful use of hypnotic drugs. They are needed not so much to give sleep as to re-establish rhythm. Where sedatives alone are required, the bromides still retain their popularity and the favourite combination with chloral is hardly surpassable. The numerous derivatives of barbitone are usually selected according to the individual experiences of the prescriber. The late Sir MAURICE CRAIG used to recommend a mixture of barbitone with sugar of milk; while the total amount was kept constant the proportion of the inert ingredient was nightly increased at the expense of the drug until none of the latter remained. CRICHTON-MILLER⁴ also recommends this method. NORTH² issues a warning against the use of morphia for an excitable patient except in association with hyoscine, whose depressing influence it corrects. That all hypnotics may be habit-forming drugs is emphasised by Dr. G. C. WILLCOCKS,⁵ who points out that this applies even to paraldehyde—a drug generally held to be too unpleasant to promote a habit. In alcoholics, he says, administration of paraldehyde probably replaces one form of dipsomania by another.

One can of course regard insomnia almost if not entirely from the psychological aspect. The difficulty of getting to sleep has been explained as due to the unconscious wish not to sleep, on the principle that any over-determined conscious emotion is the result of the opposite unconscious wish—here perhaps an unconscious fear of terrifying dreams. The field of investigation along these lines is almost unlimited.

On Thursday, Nov. 28th, at 5 P.M., at Charing Cross Hospital medical school, Prof. Edward Mellanby, F.R.S., secretary of the Medical Research Council, will deliver the biennial lecture on recent advances in science in their relation to practical medicine which was founded in memory of Thomas Henry Huxley, a former pupil of the school. Prof. Mellanby will speak on the rapid advance of science since the time of Huxley. Tickets for the lecture may be had from the dean of the school, Chandos-street, W.C.2.

³ Gillespie, R. D.: *Sleep and the Treatment of its Disorders*, London, 1929, pp. 33 and 38.

⁴ Crichton-Miller, H.: *Insomnia*, London, 1930.

² Med. Jour. Australia, August 10th, 1935.

ANNOTATIONS

A NEW SOURCE OF HORMONES

A PAPER communicated to the Biochemical Society on Nov. 15th by R. K. Callow, A. H. Laurie, and A. S. Parkes, affords an instance of an investigation leading to results in a widely separated branch of science. The work of the *Discovery Committee* on the whale fisheries has included an inquiry into the age of captured whales, one of the methods employed being an examination of the ovary of the female and a count of the old corpora lutea corresponding to the periodic ovulations. Since about half the females are pregnant, corpora lutea of pregnancy are common, and the availability of this material, collected together at the Natural History Museum in London, suggested an investigation of the hormone content, which was carried out at the National Institute for Medical Research. The investigation of the hormone content of yet another species is a familiar move in "academic" research, but in this instance the Gargantuan scale of the organs of the whale gives the result a practical importance. The clinical investigation and application of progestin, the hormone of the corpus luteum, has been seriously hampered by the high cost of reliable corpus luteum extracts.¹ No doubt an artificially prepared product will be on the market before long, but the available chemical methods are not easy, and it should facilitate the extraction of a natural concentrate if, instead of high-priced corpora lutea dissected from the sow's ovaries, and weighing about 1 g. apiece, the corpora lutea from whales, with the impressive weight of from 1 to 7 kg. each, are employed. The progestin content per gramme of the latter has actually been found to be comparable with that of fresh sow's corpora lutea. It is of particular interest to note that, whilst progestin had already, as might be expected, been found in corpora lutea removed fresh from the whale and immediately frozen,² the results now recorded were obtained with material collected under the ordinary conditions of whaling and preserved for many months in formalin. The availability of some thousands of these corpora lutea annually may lead to a striking change in the price of an important hormone.

SOME SOCIAL AND PSYCHOLOGICAL IMPLICATIONS OF ILLNESS

PHYSICIANS are reminded that they must treat patients not diseases, individuals not physiological systems. Most of those who would agree as to the necessity of this Hippocratic approach to medicine complain, however, of uncertainty in its application. The facts and procedure of which they can make use are so seldom set forth in text-books of medicine, or so vaguely alluded to, that it seems a matter of personal rather than collective experience, of common sense rather than science. This must always be in some measure true, as long as medicine remains an art. But there are now many studies which throw light on the problem of constitution and integration. It was in the field of mental disorder that these problems first received attention, since here they are most urgent. Psychiatrists are compelled by their subject matter to give thought to the connexions between different aspects of behaviour commonly distinguished as bodily and mental, and to see how

these influence each other. Modes of reaction, types of personality, the relation between mental type and physical habit, and the influence of past experiences on present responses are topics that the psychiatrist cannot evade. It is therefore not surprising that much, though by no means all, of the outcome of scientific study of these problems gained currency in psychiatry earlier than in other branches of medicine. But it is not, on that account, esoteric knowledge, shrouded in the neologisms of the psychopathologist, or relevant only to insanity. It is as much or more the product of investigations in physiology, genetics, and anthropology than of psychology and psychiatry. The fruits of these investigations may be found in a work entitled "The Biology of the Individual," reviewed elsewhere in this issue. Reminiscent in its title of the well-known Brugsch-Lewy collection of monographs, but less detailed and more coherent, it serves to indicate, as that series did, the growing importance of work on constitution and modes of reaction. If, because of its provenance, this book gives much space to matters that are of special interest to the psychiatrist and sociologist, it is none the less significant for internal medicine, in which the social and psychological implications of illness are not likely nowadays to be overlooked.

SUNNIER ELECTRIC LIGHT

THE thesis that illumination should no longer be regarded as serving a single purpose, that of providing light for vision, is developed in a publication that reaches us from America.¹ Dr. Luckiesh has collected a number of important observations, arising from his own experimental work and that of well-known American and European authorities, from which he concludes that under modern urban conditions, necessitating indoor life, the addition of short-wave (near ultra-violet) light has become essential for the maintenance of health. In other words, the majority of town-dwellers being deprived by their mode of life of the benefits attributed to unscreened sunlight, it becomes the task of the scientist and finally of the architect and the trade to adopt new standards in illumination. Dr. Luckiesh maintains that the simulation of sunlight should be adopted by progressive urban communities for indoor lighting, sunlight being now universally recognised as a powerful environmental factor. The physical factors involved are reviewed and also the therapeutic effects of irradiation with well-defined areas of the spectrum in the ultra-violet and infra-red regions. The observations of Hasselbach, Hausser, and Coblentz are summarised and the problems of transmitting media, reflection, and permanency of materials are discussed. Dr. Luckiesh points out that curative reactions should never be contemplated, but that the problem of "prevention" should be shouldered by the designer and architect under the inspiration of recognised medical and scientific knowledge. In conclusion definite proposals are made for sources of illumination responding to the supposed requirements.

This able study opens many questions which the medical profession would be well advised to watch closely. The importance to the vast army of town workers of the changes in illumination here

¹ Cf. Bishop, Cook, and Hampson: THE LANCET, 1935, i, 139; also Williams, L.: *Ibid.*, Oct. 5th, 1935, p. 796.

² Jacobsen, A. P.: *Tidsskr. f. d. norske lægeforening*, 1935, No. 5.

¹ Artificial Sunlight. By M. Luckiesh, D.Sc., Director Lighting Research Laboratory, Edison Lamp Works-National Lamp Works, General Electric Company, Cleveland, Ohio. London: The Technical Press. 1935. Pp. 254. 21s.

contemplated requires careful consideration, and the "emission" of the lamps to be used is not a question which should be left to the commercial interests concerned. Enough is already known of the possible ill-effects of over-exposure to unscreened sources of ultra-violet energy to deter us from using experimental methods in order to arrive at our conclusions. The experimental scientist is not on safe ground when he proposes to emulate midsummer sunlight. There will be no variations of intensities in the artificial source of illumination comparable to those of "rising" and "setting," no clouding and no seasonal variations, worst of all—no intermittance, or night. The more efficient the lamp the greater the danger to the public. Dr. Luckiesh remarks, and his words have a sinister quality, that in congested cities ground areas are being wasted to admit inadequate and uncertain daylight; that even at the present time, when adequate and controllable artificial light is economically possible, architecture and the indoor world are suffering from the daylight lighting habit. Even the recessing of buildings is deplored as uneconomical.

If the only remedy to the discomforts of life in over-built areas is to be found in such counsels of despair, it is time for public opinion to be aroused. Their application in Great Britain would be even more grievous than in more southerly regions; town-planners and even health authorities forget too easily that the geographical position of England should be carefully considered before American or continental suggestions are adopted. The fact that New York and Madrid are situated in the same latitude and that London is ten degrees further north should never be left out of account. The improvements and rebuilding of some parts of our northern towns have cast a permanent shadow on the surrounding inhabitants. There are some open places and playgrounds in our cities which have been converted into deep wells by "property improvement," and any further developments in this direction in the name of science should be resisted.

THE GORDON SYNDROME

IN the *Policlinico* of Oct. 14th L. Paterni and P. Maroncelli, of Rome, record the result of their studies of the peculiar encephalitic syndrome (rigidity, incoördination, ataxia, and paresis, accompanied by wasting) described by M. H. Gordon in 1932 as produced in rabbits by the intracerebral injection of suspensions of lymphatic glands from cases of Hodgkin's disease. As similar suspensions of glands from other conditions did not have this effect it was suggested by Gordon that intracerebral injection of the rabbit provided a biological test, of practical application, for lymphadenoma, which would be useful especially where the histological picture is atypical. As related in our issue of Oct. 19th (p. 895) confirmatory evidence of the diagnostic value of the test has since been published by van Rooyen and Ogilvie, by van der Hoeden and Hulst, by Davis, and by Bortolozzi. In 1933 however it was shown by Friedemann and Elkeles that suspensions of normal bone-marrow and occasionally of spleen and leucocytes can produce this same syndrome in the rabbit. Subsequently Mackenzie and van Rooyen confirmed this and showed that the action was not due to the proteolytic enzyme of Jochmann. There is an incubation period of one or more days before the encephalitic syndrome appears and histological examination of the central nervous system of the affected animals has revealed lesions indicative of meningo-encephalitis. Guinea-pigs develop the

same signs and lesions and van Rooyen has shown that ferrets are susceptible, but mice appear to be unaffected.

The Italian investigators tested lymphatic glands from seven patients by injecting suspensions of them intracerebrally into rabbits. The first patient had fairly typical Hodgkin's disease and a positive Gordon syndrome was produced in all of three rabbits. In the second patient Hodgkin's disease was associated with tubercle: glands removed during life, and others removed after death, produced the syndrome on intracerebral inoculation, but not on intravenous or intraperitoneal injection. The third case was one of tuberculosis of the glands of the neck, and the three rabbits injected were still healthy after three months. The fourth patient also had tuberculosis with bilateral lung involvement and positive sputum, and the two inoculated rabbits developed the syndrome after 16 and 18 days, dying a week later. In the fifth case—another instance of tuberculosis of the glands of the neck—one rabbit died after a few days from unknown cause, the other remained well for two months. The sixth patient had chronic leukemic lymphadenitis and the result was negative, while the seventh had chronic leukæmic myelosis (white cells 200,000) and the two rabbits which were injected both showed Gordon's syndrome. A suspension of the leucocytes from this last patient was now tested on two rabbits: one remained unaffected, the second developed meningo-encephalitis after ten days. A second case of myelocytic leukæmia being available, this last experiment was repeated with positive result in both of two rabbits. Paterni and Maroncelli found that suspensions of active material from the two Hodgkin patients gave negative results when injected into rabbits elsewhere than the brain. The histological lesions found in the central nervous system of the affected animals varied and their intensity was not in proportion to the severity of the symptoms. There was evidence, however, of myelitis as well as meningo-encephalitis so that the condition appears to be one of meningo-encephalo-myelitis with lymphocytic infiltration (especially perivascular), foci of necrosis, and retrogressive changes in the nerve-cells of the brain and spinal cord, the anterior horn cells being notably affected. The conclusions reached are briefly that Gordon's results with Hodgkin's disease are definitely confirmed; that a positive result is obtained more easily if the material is kept on ice for some time; that a positive result is obtainable also in other diseases of the haemopoietic system; that a positive result is obtainable not only with gland tissue, but also with spleen, liver, and nerve tissue; that the severity of the reaction bears no relation to whether the case of Hodgkin's disease is typical; that negative results may be obtained with blood, cerebro-spinal fluid, and skin, although the same case may give positive results with gland, spleen, and liver; that positive results may also be got in guinea-pigs, though less severe; and that in rabbits as little as 0.1 c.cm. of 20 per cent. suspension of lymph gland may be enough to cause the syndrome. Attempts at passage were all negative, and no protective properties were found in the blood of animals that recovered.

In a discussion of their results Paterni and Maroncelli emphasise the importance of the failure of passage, and consider that this is a strong argument against the infective nature of Hodgkin's disease. The syndrome is obtainable with tissues from normal persons and also in other diseases, so that Gordon's test for the diagnosis of Hodgkin's disease is not

specific. On the other hand, it opens up a biological problem as to the nature of the encephalitogenic agent existing in health and also in organs from cases of disease of the hæmopoietic system. Furthermore there seems no reason to doubt that the syndrome is of real practical utility for identifying glands from cases of lymphadenoma. In the hands of Gordon himself, who retains the rabbits for only a week after inoculation, glands tested at St. Bartholomew's Hospital from suspected cases of lymphadenoma over a period of three years gave the following results¹: glands from lymphadenoma cases, 35 tested, 30 positive; glands from conditions other than lymphadenoma, 67 tested, 67 negative.

FOR AND AGAINST DOCTORS

"If a hundred or a thousand people, all of the same age, of the same constitution and habits, were suddenly seized by the same illness; and one-half of them were to place themselves under the care of doctors, such as they are in our time, whilst the other half intrusted themselves to Nature and to their own discretion...."

THIS outline of a neatly controlled experiment, though of modern pattern and indicating a critical attitude to therapeutics which is generally regarded as peculiar to our own times, is actually taken from *Thoughts from the Letters in J. Lohse's translation of Petrarch*. The forecast of the result of such an experiment hazarded by Petrarch's medical friend is not flattering to our profession; but the compilers of the anthology "For and Against Doctors"² where it is to be found, with many other biting comments on our art, deem it not surprising that mediæval doctors were held in low esteem by the public; the qualified "leech" of the Middle Ages derived his knowledge almost entirely from Arabian commentaries on the books of Hippocrates and Galen and had little or no practical training. A large part of actual practice, however, was in the hands of unlearned men, generally in religious orders, who were probably like hospital orderlies or the village nurse, and acted independently. It is in the mediæval section of this anthology that we find most of its gems, though ancient Chinese records have yielded comments still apposite—for example: "The skilful doctor knows by observation, the mediocre doctor by interrogation, the ordinary doctor by palpation." The "modern" section is said to include only a few extracts from English literature of the nineteenth and twentieth centuries, culled almost at random, but, we may add, with fine discrimination. Here, as Dr. Hutchison and Dr. Wauchope point out, the praise is more generously bestowed than in earlier periods, but alas, even in an age of advancing technique and scientific discovery, it is mainly for kindness and moral support rather than for professional skill. If therefore we have dwelt here on the bitter rather than the sweet in this collection it is because much of the latter has an emotional flavour, being addressed to heart rather than to head. And also perhaps, because there is a malicious pleasure in letting others say what we are debarred from saying ourselves. For in the words of Miss Joyce Denys quoted at the end of this delightful anthology: "Of course everybody knows that Doctors never say anything unkind about each other, it is part of their Unwritten Law and a sore trial to nearly all of them."

¹ Gordon, M. H., and Gow, A. E.: *Proc. Roy. Soc. Med.*, 1934, xxvii. (Sect. Med., p. 49).

² *For and Against Doctors*. An anthology compiled by Robert Hutchison and G. M. Wauchope, and illustrated by Miss Barclay-Smith. London: Edward Arnold and Co. 1935. Pp. 165. 7s. 6d.

ANATOMY AT ST. THOMAS'S

THE extensions and alterations of the anatomical rooms, which have been in progress in the medical school at St. Thomas's Hospital, are now complete, and a compact and well-equipped department was visited last week by fellow anatomists and others on Prof. A. B. Appleton's invitation. The new two-floored buildings occupy an area lying behind the old dissecting-room. The upper floor is given over to laboratories, including the professor's rooms and technicians' work-room; this position gives excellent lighting. The flooring here, and in the X ray room, is of Granwood, a composition in blocks looking very like wood, which seems to promise a long and serviceable life. Other rooms, on the lower level, comprise museums, filing offices and work-rooms, radiological and photographic rooms, and, of course, the dissecting-room. All these, with two lecture theatres, make a well-ordered and contained section of which the medical school may justifiably be proud.

Medical men whose first education in their profession dates back some forty years or so have memories of a dissecting-room and a cloak-room, and little beside this, in which they carried through their anatomical studies. It would probably cause them some astonishment to come within the circuit of a modern department of anatomy, especially if they have had occasion to read some recent remarks on the futility of anatomical knowledge, with the suggestion of the moribund senescence of the subject. There is no sign of such decay. On the contrary, there is enthusiastic research by numerous workers in ever-widening fields, and the dissecting-room is only one of the many laboratories which are necessities in every modern department. A visit to one such as this at St. Thomas's, with its modern methods both in work and teaching, should convince any honest mind that anatomy has advanced and widened more rapidly than some other subjects which come under the ægis of medicine.

A YEAR'S WORK ON ASTHMA

OSLER pointed out that the student of syphilis gets to know the whole of medicine. The Asthma Research Council is coming to much the same conclusion about the study of asthma. The latest report of progress¹ admits that the asthma problem has so many sides that rapid progress cannot be expected. The problem in fact still remains unsolved in its essentials, but at five centres work on a particular line of inquiry is going on with a view to laying bare one root of the baffling problem. At Guy's E. T. Conybeare and L. J. Witts have been estimating the degree of improvement which may be expected in asthmatics as the result of general medical care and advice without the use of any specific treatment. At the same time R. S. Bruce Pearson is attempting by physical methods to reproduce the conditions which the patient believes to have precipitated attacks. At Guy's all patients go through a probationary period of two months in which they perform the exercises recommended by the Council. Among asthmatic children C. H. Rogerson continues his study of the psychological factors lowering the threshold for stimuli which ordinarily produce an attack. The intelligence of these children is above the average, but many of them have to contend with a difficult environment, often indeed parental

¹ Asthma Research Council. Report of Progress for the Year ended Oct. 31st, 1935. Copies free from the secretary of the Council, c/o King's College, Strand, London, W.C.2.

over-protection. At St. Mary's over 150 cases of angioneurotic oedema have been investigated and nearly as many cases of migraine of an allergic character. Desensitisation having proved very laborious and exacting, the more intelligent patients are now being taught to inoculate themselves at home. Against the hay-fever season of 1936 a great store of antigen has been amassed: 28 lb. of pure grass pollen—equivalent, it is said, to 58×10^{16} grains of pollen. This yield has been rendered possible by building and equipping a pollenarium alongside six separate crops of grasses and grain grown on Lord Iveagh's estate at Pyrford. Heather pollen fever is regarded as not uncommon and provision is being made for that also. At King's College Hospital the physical side of treatment takes precedence. There it is accepted that the asthmatic is apt to breathe uneconomically even in the period between attacks. If three things can be secured—viz., (1) automatic diaphragmatic breathing, (2) a chest expansion of a certain degree, (3) ability to exhale continuously for at least thirty seconds—success in treatment is almost assured. In fact an attack can often be prevented from coming on by doing the exercises. At King's College work is biochemical. J. L. D'Silva has made it seem probable that in bronchial asthma the functions of the sympathetic nervous system are in some way depressed. In hay-fever patients it is found that the serum potassium is considerably higher than in normal people, this observation being the first evidence of a material difference capable of analysis between the chemical processes of asthmatic and normal persons. A broncho-dilator substance extracted from broom and resembling adrenaline is being prepared for clinical trial. At Leeds investigation is again on the physical side. Observations suggest that the over-expansion of the chest in asthma is not due to true emphysema; in fact the chief deformities observed in asthmatics often yield readily to treatment and breathing exercises are effective in correcting the observed deformities. Finally, at the Charterhouse Clinic G. S. Scott and Harry Coke are able to register the constitutional effects of X rays, applied in moderate doses to a large body area, by a serological precipitation test. Pure allergic asthma, they think, responds best to X ray treatment. The report mentions many other investigators and their work.

RADIUM PROTECTION BY BUILDING MATERIALS

THE use of radium in relatively large amounts for the beam treatment of cancer is extending, and the National Physical Laboratory is endeavouring to supply designers of radium departments with data on the measures which should be taken to secure for those who work near "bombs" a degree of protection up to the standards laid down in the International Recommendations for X Ray and Radium Protection. In a paper read last week by Mr. G. W. C. Kaye, D.Sc., in association with Mr. G. E. Bell, M.Sc., and Mr. W. Bink, M.Sc., before the British Institute of Radiology, the part which building materials can play in providing this protection was further considered. Their experiments were conducted under everyday conditions when scattered radiation is pronounced. The materials tested were full-scale walls of brick from 4 to 23 in. thick, of coke-breeze from 3 to 9 in. thick, and of concrete from 1 to 14 in. thick. Solid steel doors up to $4\frac{1}{2}$ in. thick, as well as various thicknesses of lead and aluminium, were also tested. Up to several grammes of radium were used as a source of radiation, and the

measurements were made by means of thick air-walled ionisation chambers, so as to simulate the conditions of deep-seated tissue. In the past it has been customary to regard the absorption of gamma rays by different materials as proportional to their densities, but Dr. Kaye and his colleagues have been able to show that while the relationship is sufficiently exact for the lighter elements, up to (say) barium, it requires correction when comparing light and heavy elements owing to photo-electric absorption in the latter. Protective values are generally quoted in terms of lead. When these are translated into terms of building materials by the aid of the density law, it now appears that the thicknesses deduced should be increased by as much as 40 per cent. for unshielded radium, and 60 per cent. for the radium beam from a typical present-day bomb.

THE IRRADIATED CELL

AT a time when intensity is the subject of discussion in every clinic where attempts are being made to establish a scientific basis for the technique of radiation a statement in the introduction to the green book on radium therapy just issued by the Medical Research Council¹ claims attention. Referring to the work of Mr. F. G. Spear, D.Sc., and his colleagues at the Strangeways Laboratory, it says:

"The reaction of the tissue which they have been using is not a simple function of the dose of energy released in it. They find in fact that to get a well-recognised effect there is an optimum intensity at which the release of energy may occur. That is to say the effect is observed with a minimum absorption of energy, provided that the energy is absorbed by the tissue at a particular rate."

The facts established by Dr. Spear are in general well known. The minimal threshold dose, latent period, diminution in cell division, and subsequent compensatory increase with abnormal mitotic figures are recognised biological responses to irradiation, and it is now possible with the help of the physicist to measure with much greater accuracy the dose actually received by the tissue which produces these effects. We are told that using the Sievert unit of dosage for gamma rays, working between 460 and 1660 units of dose, the existence of the compensatory increase depends on the intensity at which the dose was given. The intensity varied from 184 to 469 units, a ratio of one to 2.5, and the effect is seen with the lower intensity and longer time of exposure, but not with the higher intensity. To get this variation of intensity a similar variation in time is necessary, and it is again clear that intensity and time cannot be separated particularly with single doses. We thus return to the position, long since established by Regaud, that biological response is a function of at least two variables, dosage and time, on which intensity obviously depends. This is recognised by Dr. Spear who investigated this aspect of the response by fractionating the dose and found, for the tissue examined, that there was an optimum spacing for diminishing mitosis; it is of interest that in cultures derived from normal and malignant tissue, cultivated under similar conditions, the same dose of gamma rays causes a greater fall in cell division in the malignant than in the normal tissue growth. In-vivo experiments with chick embryos were used to show the relative importance of direct and indirect effects of irradiation. It was clearly demonstrable that the variation of mitosis following irradiation closely resembles that following

¹ The Medical Uses of Radium, see THE LANCET, Nov. 9th, 1935, p. 1083.

the exposure of tissue cultures to irradiation, and is a direct effect on the cell. The dose which has delayed lethal effect on the embryo is little over half that which affects the blood-vessels and destroys the circulation; but in the post-circulatory chick the compensatory effect, as given by the number of cells in mitosis counted over a period of four hours following irradiation, appears rapidly and gives a steep curve. This shows that the presence of a blood-supply has an important bearing on the recovery of the irradiated cell, but dosage high enough to injure the blood-cells or, at a still higher level, the endothelial cells of the vessel wall has not so far appeared to be compatible with the survival of the embryo; and although it is suggested that this effect is again a function of intensity it would appear to be a result of lethal dosage. Work by Miss Muriel Robertson, D.Sc., at the Lister Institute on *Bodo caudatus*, on which we commented recently,^{*} brings out two points: that there appears to be a "radium conditioning" in cultures exposed to gamma rays of radium at non-lethal intensity, and that when cultures are re-irradiated a full generation time may be used between re-irradiations without significant loss of total effect. Histological studies at the Bland-Sutton Institute suggest that vascular changes are superimposed on the direct effect with high intensities, but there is nothing to show that it is not the time factor rather than actual intensity which determines this.

If we attempt to relate these experimental findings to the clinical problems which confront us it is at once apparent that the question of intensity is not yet settled. The fact that fractionating the dose appeared to show that there was an optimum spacing, possibly different for different tissues, may be related to the "generation time" of the *bodo*, and the two findings together suggest that it may be possible to fractionate a dose, to obtain the full value of the time factor, without sacrificing the optimum intensity, should this prove to be higher than is compatible with continuous or prolonged daily irradiation.

VOLUNTARY HOSPITAL POLICY

WE learn from the Statistical Review issued by King Edward's Hospital Fund for London[†] that 2,139,000 sick and injured were tended by the London voluntary hospitals in 1934, 269,000 occupying beds and 1,870,000 being treated in the out-patient departments. These are record totals, the major part of the increase for each category being in 1934. A total expenditure of 3½ millions in 1930 rose to nearly 4 millions in 1934; the rise would have been greater had there not been some fall in prices during the period. Receipts clearly show the effects of the 1931 crisis. The 1930 total of £4,912,000 dropped during the next two years by nearly £600,000; a recovery of £100,000 in 1933, and a larger increase of £480,000 in 1934, brought the total up to nearly what it was at the beginning of the period. Voluntary gifts remained almost constant—a testimony to public appreciation of the work of the voluntary hospitals. Increased receipts from patients and public authorities for services rendered kept up the total ordinary income for maintenance. During 1934 the balance of income (including legacies) over expenditure for the whole of the 145 hospitals showed a narrow margin of £93,000; 91 hospitals had surpluses and 54 deficits. These figures for

1934 lead the economy committee of the Fund to draw two conclusions:—

(1) The work of the voluntary hospitals in London continues to grow not only in scale but also in quality as a result of the progress that has been made in curative medicine and surgery. The hospitals have thus been enabled to provide more and more effective treatment for a continually increasing number of the sick poor for whom they were originally founded and who remain their first care. The advances in therapeutic knowledge and skill have inevitably led to demands from other sections of the community that they should not be debarred from the benefits of the progress, and the voluntary hospitals, in adapting themselves to the changing conditions brought about by the ever-developing co-ordination of social life in this age, have met the necessities of the case by enlarging their field of service, which now includes not only the indigent sick and a large body of wage-earners who make substantial contributions either direct or through contributory schemes, but also persons of limited or moderate means who are admitted to pay-beds.

(2) In the aggregate the receipts, including both voluntary gifts and patients' payments, have kept pace with the increased maintenance expenditure. The voluntary gifts to maintenance show a substantial increase since the war, in addition to which large amounts have been received from this source to increase permanent endowments or to meet the heavy expenditure on schemes of extension and improvements or reconstruction at existing hospitals, as well as on buildings for new hospitals. This capital expenditure has been a marked feature of the finance of the voluntary hospitals in recent years, though since the crisis in 1931 some hospitals have had to postpone necessary expenditure for re-equipment, reconstruction, &c.

These figures may go far to dispel the doubts which are sometimes expressed regarding the present-day financial stability of the voluntary hospital system, but Mr. R. H. P. Orde last week expressed grave anxiety about the position. Mr. Orde is hon. secretary of the British Hospitals Association and he was speaking at the annual conference of the Incorporated Association of Hospital Officers. He recalled the departmental voluntary hospitals committee of 1921 which recommended Government grants towards maintenance and extension, the recompensing of hospitals in compensation cases, the remission of legacy and succession duties, and grants for training of nurses—all these things being measures of the barest justice. But because the voluntary hospitals were themselves without any machinery or organisation to compel consideration, this report came to naught, and the hospitals are still trusting to individual appeals to the heart. The strength of the voluntary system, he is satisfied, lies in its freedom from statutory control; its weakness is due to a lack of what might be called self-control. There are some who dread the acceptance of Government grants, but hospitals have taken and take money from where they can get it, and already they are supported as much from payments for services rendered as from charitable gifts. Let the voluntary hospitals in every area establish real and effective friendly contact with the public authorities; let them drop their wasteful rivalry, and let them look upon the voluntary hospital as part of a national scheme. The danger to the voluntary hospital system does not, in Mr. Orde's view, come from outside but is inherent in the system itself. Let it move while there is yet time.

THE Minister of Health has appointed a Central Housing Advisory Committee, under the new Housing Act, whose members will offer advice on questions submitted to them, and may make representations to the Minister on any subject of general concern in relation to housing. The names of the Committee are given on p. 1211.

^{*} THE LANCET, Sept. 21st, 1935, p. 675.

[†] From the office of the Fund, 10, Old Jewry, London, E.C.2. Pp. 32. 1s.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXVIII.—PROGNOSIS OF ULCERATIVE COLITIS

DANGER TO LIFE

Hospital patients.—From a discussion on ulcerative colitis held at the Royal Society of Medicine in 1909 it emerged that no less than 141, or 50 per cent., of 288 cases collected from the records of seven London hospitals died in hospital. The ultimate mortality was presumably considerably greater. Bellingham Smith (1928) reported that 24 out of his 46 cases, or 52 per cent., had died, 13 under medical and 11 under surgical treatment. With this exception recent statistics have shown a smaller death-rate than that of the 1909 collection of cases. Thus J. R. B. Hern (1931) gave the mortality in Guy's Hospital of 50 cases between 1917 and 1926 as 28 per cent.; as an additional 12 per cent. died within a comparatively short time of their discharge the total mortality was 40 per cent. Hardy and Bulmer (1933) recorded 31 deaths among 95 patients in the General Hospital, Birmingham, between 1920 and 1932, a mortality of 33 per cent. The mortality was highest in the first year and thereafter diminished rapidly with every year of survival.

Private patients.—The statistics quoted above were taken from hospital patients. The mortality among patients seen in private practice, especially when they have had the advantage of institutional treatment, is very much less. Thus 7 out of 35 patients seen by E. Spriggs at Ruthin Castle, or 20 per cent., died there or in the two to twenty years which have elapsed since their admission. Of these, 2 received no treatment whilst at Ruthin, and 3 were hopeless on admission; the 2 former at least should be excluded, which would reduce the mortality to 12 per cent.

Forty patients with ulcerative colitis were admitted into New Lodge Clinic between 1921 and 1934. None died in the clinic, although in the large majority the disease was of a severe character, and only 3 have died since leaving it, in each case as a direct sequel of operation. The history of these fatal cases is as follows:—

1. The first was a woman of 56, who insisted on leaving the clinic at the end of a week, before there was time to institute any serious treatment. She was a case of average severity and should have done well with prolonged medical treatment. Unfortunately within a few days of leaving a colectomy was performed, in direct opposition to our advice, since a fatal issue from a one-stage operation in the acute phase of the illness was almost inevitable.

2. The second case was a woman with severe perianal suppurative and multiple fistulae in addition to ulcerative colitis. She was therefore transferred to a hospital for colostomy after being in the clinic thirty-seven days. The pelvic colon was accidentally perforated during the operation, and she died twenty-eight days later from general peritonitis.

3. The third fatal case was a man of 56 with severe colitis. Very little improvement occurred during the three weeks he was in the clinic. For family reasons he had to go to Ireland, where a month later an appendicostomy was performed, death occurring shortly afterwards.

If the patient who was in the clinic for only a week and died after colectomy shortly after leaving is excluded, the mortality is 5 per cent.; if she is included it is 7.5 per cent.

I believe that the mortality should not exceed

5 to 10 per cent. if patients receive adequate treatment for sufficient periods. As Hardy and Bulmer point out, there are few diseases in which a patient can reach such a state of emaciation and exhaustion and yet recover.

Table I. shows the contrast between the results in private and hospital patients—the Ruthin Castle and New Lodge Clinic statistics on the one hand, and those of Guy's Hospital (Hern) and the General Hospital, Birmingham (Hardy and Bulmer), on the other.

TABLE I

Total mortality-rate in private and hospital patients			
	Total.	Deaths.	Percentage.
New Lodge Clinic and Ruthin Castle ..	75	10	13.3
Guy's Hospital and General Hospital, Birmingham ..	144	51	35

PROSPECTS OF COMPLETE RECOVERY

I believe that a large majority of patients with ulcerative colitis, however severe, should recover eventually so completely that they are able to lead a life of normal activity. There is a very great tendency to recurrence, but as time goes on, especially if each recurrence is treated by complete rest in bed and by whatever other measures appear necessary from the earliest possible moment until the clinical evidence and sigmoidoscopic examination show that all traces of active disease have passed, the recurrences become milder and more infrequent until finally they cease.

Relapses tend to occur with acute infections, especially tonsillitis, food poisoning, dietetic indiscretions, exposure to cold and damp, and, much less frequently, fatigue from mental or physical overwork. If the first attack is thoroughly treated at its onset and treatment is continued for sufficiently long, relapses are unlikely to occur. I have only had an opportunity of seeing one case at the onset of the first attack.

The patient was a boy of sixteen whom I saw with Dr. W. H. Bradley at Downside in the early morning of the third day of his illness. He had a high temperature and diarrhoea, and large quantities of blood with pus and mucus were passed with each stool. Sigmoidoscopy showed the typical appearance of severe ulcerative colitis, and cultures made from the stools grew Flexner's dysentery bacillus. He was given 40 c.cm. of antidyenteric serum intravenously twelve hours later. The following evening his temperature fell to normal and it did not rise again. The diarrhoea ceased and by the thirteenth day did not even contain occult blood. There has been no recurrence in the eight years which have since elapsed.

When a patient first comes under treatment after he has already been ill for months or years, recovery is always very slow, and a year or more may elapse before he is able to return to activity. For the next few years he will remain very liable to relapse, but it is astonishing to find how complete the recovery may ultimately be in spite of the presence of severe organic complications, such as multiple strictures and polyposis. The appearance of the colon when examined after an opaque enema may show a complete disappearance of the normal outline, and yet the patient may have had no diarrhoea or other symptoms for years. In such cases the mucous membrane when examined with the sigmoidoscope

may be quite healthy, or it may show the presence of scars and occasionally of polypi, or a stricture extending to the lower end of the pelvic colon or into the rectum itself, when it may prevent the passage of an instrument more than a very short distance.

In Table II. I have adopted the classification used by Spriggs in his analysis of the Ruthin Castle cases, which include 13 of chronic ulceration after amoebic dysentery in addition to 35 of ulcerative colitis, and have added the New Lodge Clinic series of 40 cases of ulcerative colitis. I have had a report about every case but one within the last two months.

TABLE II

Cases of Ulcerative Colitis who received some form of treatment whilst at Ruthin Castle or in New Lodge Clinic from twenty to one year ago

	Ruthin Castle.	New Lodge Clinic.	Total.	Percentage.
Well and "carrying on"	34	32	66	77.6
No relapses	21	17	38	—
Relapses, but recovered from them	13	15	28	—
Not well, but "keeping better and about"	5	4	9	10.6
Ill	1	1	2	2.4
Dead	5	3	8	9.4
Total	45	40	85	

COMPLICATIONS

Table III. gives the frequency of the complications occurring among 693 cases treated at the Mayo Clinic (Bargen, 1929) and 40 cases at New Lodge Clinic. In many instances two or more of the complications occurred in the same individual.

TABLE III

Frequency of complications in 693 Mayo Clinic and 40 New Lodge Clinic cases

	Mayo Clinic.		New Lodge Clinic.	
	Total.	Per cent.	Total.	Per cent.
Polypsis	69	10	5	12.5
Strictures	59	8.5	5	12.5
Arthritis	30	4	1	2.5
Fistula-in-ano and perirectal abscess	26	4	5	12.5
Perforation	23	3	0	—
Cutaneous lesions	17	2.5	1	2.5
Cancer of the rectum or colon	15	2	0	—
Achlorhydric gastritis	—	—	3	9
Nephritis	8	1	1	2.5
Endocarditis	7	1	0	—
Ocular disease	5	1	1	2.5
Mesenteric thrombosis	3	0.5	0	—
Thrombo-phlebitis	—	—	1	2.5

Polypsis.—The first references to polyposis of the colon as a complication of ulcerative colitis appeared in *Guy's Hospital Reports* for January, 1925, when C. Ive described a case under my care at Guy's Hospital. Since that time polyposis has become recognised as a common sequel of partial or complete healing in very chronic cases, the actual incidence being about 10 per cent. The polyps form as healing occurs. Most are composed of mucous membrane, containing much inflammatory and granular tissue, but occasionally true adenomata develop. This has been proved by microscopical examination in several of my cases and also at the Mayo Clinic. The polypi are readily recognised with the sigmoidoscope, but they must be distinguished from the tags of mucous membrane which are occasionally left as islands in extensive areas of ulcera-

tion. Their extent can be recognised with the X rays, although much care is required in interpreting the radiograms. Polypi may give rise to hæmorrhage after recovery from the colitis, and they may also form foci of infection, which may be the starting-point of a recurrence.

Carcinoma may develop as a result of malignant degeneration of an adenomatous polyp occurring as a complication of ulcerative colitis, though the large majority of adenomata which become malignant are not secondary to any form of colitis. Fifteen such cases occurred in the Mayo Clinic series; many were in young individuals and the carcinoma was always of a high degree of malignancy. I have seen 3 cases, none of which is included in the New Lodge Clinic series. In 1 the growth developed three years after complete recovery from the ulcerative colitis. The second case was a woman of 50 who had been ill for several years; active ulcerative colitis, multiple polyposis, and a carcinoma of the rectum were all present together when I first saw her a fortnight before her death from exhaustion. In the third case a carcinoma developed in the cæcum in a man of 42, who had had symptoms for ten years; the ulcerative colitis was still active but showed signs of healing; two small polypi were present in the rectum. Death followed an exploratory laparotomy in which minute secondary deposits were found scattered over the whole of the parietal and visceral peritoneum.

Stricture.—The first record of the association of stricture as a complication of ulcerative colitis appeared in *Guy's Hospital Reports* for 1925, when Ive and Venables each described a case which had been under my care at Guy's Hospital and New Lodge Clinic respectively. Strictures develop in the course of healing of very chronic cases, generally without any change in the symptoms. As the rectum and pelvic colon are frequently involved, the condition can often be recognised with the sigmoidoscope. Its extent can only be ascertained with the X rays after a barium enema, which often reveals two or even three separate strictures. It is, however, very difficult to distinguish between an organic fibrous stricture and one resulting from spasm by either method, as a spasm may remain unaltered for weeks. An operation is indicated only if X ray examination after an opaque meal shows that there is stasis above the stricture in spite of the presence of diarrhoea. I have had three such cases, in each of which complete recovery followed a short-circuiting operation, without which death would almost certainly have occurred.

Perirectal abscess and fistula-in-ano.—Perirectal abscess is a serious complication. It may develop as a result of infection of one or more anal crypts from the purulent rectal discharge, or one or several fistulae may develop as long tracts burrowing high up the rectum from beneath the anal sphincter. This complication may occur during the active stages of the disease, but I have seen three cases in which it only became manifest after apparently complete recovery, giving rise on each occasion to a recurrence of the colitis of more or less severity. Painful anusitis with secondary spasm of the anal sphincter is a still more common complication—the result of long-continued diarrhoea, sometimes aggravated by carelessness in the administration of colonic douches.

Perforation.—Perforation of an ulcer occurred in 3 per cent. of the Mayo Clinic cases, but in only 1 of about 100 cases I have seen. It was, however, the

cause of death in 6 out of 38 fatal cases occurring among 55 cases at Guy's Hospital between 1888 and 1907.

Cutaneous complications.—Numerous cutaneous complications were observed in the Mayo Clinic series. The most important is the development of deep irregular sloughing ulcers. This complication occurred together with suppurative conjunctivitis, scleritis, and iritis in one New Lodge Clinic case; here both the cutaneous and ocular symptoms appeared to be the result of vitamin deficiency in an anæmic patient, suffering from a severe infection, who had been kept for a long period on a very inadequate diet. Pellagra may also occur under similar conditions.

Ocular complications.—Burrill Crohn (1925) has described the occurrence of conjunctival and corneal inflammation as a result of vitamin deficiency in patients with ulcerative colitis, who had for long periods been kept on too strict a diet. The condition is similar to the xerophthalmia observed in Central Europe during the war and in famines in India as a result of deficiency in fat-soluble vitamin A. Local treatment has no effect, but rapid recovery follows, as in the case complicated by sloughing cutaneous ulcers mentioned above, when the patient is given a satisfactory diet.

Arthritis.—Multiple arthritis, very similar to that occurring in acute rheumatism, is a well-recognised

complication of bacillary dysentery and it occurred in 4 per cent. of the Mayo Clinic cases of ulcerative colitis. I have only seen it once in about 100 cases of ulcerative colitis. It was accompanied by high fever and affected numerous joints for short periods, exactly as in acute rheumatism, though it did not respond to treatment with salicylates. The attack lasted about three weeks, leaving the joints without deformity and with perfect freedom of movement.

Circulatory and renal complications.—Suppurative pyelophlebitis might be expected to be a common complication, but it has only been seen once in 1200 cases at the Mayo Clinic, and I know of no such case recorded in England. Mesenteric thrombosis occurred as a rare complication in the Mayo Clinic series, and I have seen one case with recurrent thrombo-phlebitis in the veins of the legs. Infective endocarditis is another rare complication.

Nephritis occurred in 1 per cent. of the Mayo Clinic cases. A woman of 35, who was admitted to New Lodge Clinic with very severe ulcerative colitis, was found to have severe *B. coli* pyelo-nephritis; at the end of three months, by which time she had completely recovered from the colitis, the urine was perfectly normal and was sterile on cultivation; she had been given 360 grains of alkali a day.

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SPECIAL ARTICLES

BRITISH MEDICAL ASSOCIATION

MEETING IN MELBOURNE

SECTION OF DISEASES OF CHILDREN

Dr. ROBERT HUTCHISON presided at this section when Dr. A. JEFFREYS WOOD and Dr. IAN WOOD (Melbourne) contributed jointly a paper on

Pink Disease

An excellent description of pink disease by Selter of Solingen, published in 1903, attracted little attention until Swift of Adelaide restated the syndrome in 1914. In a series of 200 cases in Australia, all were under 4 years of age. The pathology was indefinite, the nervous system showing variable and inconstant minor changes, probably no more extensive than was to be expected from a terminal infection. At present they preferred to maintain an open mind as to the site of attack of the noxious influence, and would rather visualise it as a toxin diffusely distributed throughout the body. The causation of pink disease was unknown, but several theories had been brought forward. Drs. Wood thought that the avitaminosis theory was inconclusive, on account of the relative frequency of the disease in Australia. This favoured rather the light-hypersensitivity theory of Braithwaite; but against this theory was the fact that cases of pink disease did better if nursed in the open air, and moreover an analysis of cases failed to show that the greatest number occurred at the season when the hours of sunshine are at a maximum. The infection theory was the most attractive. Although attempts to demonstrate the presence of organisms had been vain there was much indirect evidence in favour of a virus infection. Many cases started with a febrile attack, and often the disease seemed to have been contracted after contact with a

victim. The fact that adults and children under one year were seldom affected could be explained if the virus was widely spread throughout the community in a mildly pathogenic state, giving the parent and young child an immunity. On rare occasions the organism would assume a pathogenic rôle in a highly susceptible individual, usually a child aged between 8 and 18 months. This would explain the infrequency of transmission by direct contact, and also the occurrence of sporadic cases in isolated parts of Australia. Dr. A. J. Wood outlined the symptomatology of pink disease, emphasising its prolonged and natural course. Up to the present no successful specific cure had been found. Symptomatic treatment, although it could not greatly alter the course of the disease, would lessen the discomfort of the sufferers, and alleviate the mental and physical stress of the parents. His own practice was to order light clothing with cotton, or preferably silk, next to the skin, and nursing in a perambulator or cot in the open air, with graded sun baths during the daytime and a tepid bath night and morning to the whole body, followed by gently rubbing with methylated spirits and application of dusting powder. If the fingers and toes showed irritation, equal parts of methylated spirits and tr. iodine applied as a paint would prevent onychia and at the same time lessen oral reinfection. Stomatitis was prevented by allowing the child to suck a wool and gauze swab soaked in 1 in 4 hydrogen peroxide. Younger children did well on a diet of unboiled cow's milk, those under two showing a great dislike for solid foods. Some older children seemed to enjoy raw vegetables and fruits. A mixture of bromides and chloral hydrate might be useful in insomnia. The mortality in treated cases would be less than 5 per cent. at home, but 30 per cent. in hospitals. This was due partly to the more severe cases admitted, but mainly to the risks of cross-infection, the patient succumbing to bronchopneumonia, gastro-enteritis, or cystitis. Drs. Wood

emphasised the importance of nursing cases of pink disease in healthy surroundings and out of hospitals.

The PRESIDENT said that Australia had the credit of being the country in which pink disease was first definitely established as an entity. He thought the disease was less common in England, only about 30 cases being admitted to Great Ormond-street in the last five years. There had, however, been local outbreaks in certain districts, notably in the neighbourhood of Birmingham. He was completely puzzled as to the cause of pink disease. There was very little evidence in favour of vitamin deficiency, and the infection theory was still very inconclusive. He drew attention to the resemblance between pellagra and pink disease, and thought that they might have a common cause. Atropine had been highly praised by some continental writers, but he thought it of no great value.

Dr. EDGAR STEPHEN (Sydney) gave a bad prognosis in the presence of much insomnia or excessive sweating. An additional diagnostic factor was a glassy appearance of the bones (resembling scurvy) and pencilling of the centres of ossification. Intranasal feeding might become necessary. He had seen one case of foot-drop as a sequela, and one of pellagra which he thought was due to deficiency following an initial attack of pink disease with starvation. In his experience the main cause of death was sudden heart failure.

Dr. S. F. McDONALD (Brisbane) had seen pink disease in children of many different nationalities, but never in aborigines or half-castes. The disease had many points in common with poliomyelitis, but the infection was probably in the sympathetic system. He described a case of a man aged 31 who appeared to have contracted pink disease.

Dr. ROBERT SOUTHEY (Melbourne) also mentioned the close analogy between pink disease and poliomyelitis. He knew of one family in which three children had had pink disease; one child subsequently developing poliomyelitis and finally herpes zoster. He had treated cases of pink disease with pooled human serum, and considered that some had benefited. Although the blood calcium was normal, large doses of calcium improved the sweating and skin irritability. Treating pink disease usually meant treating the wrecked nervous systems of the parents.

Dr. F. N. LE MESSURIER (Adelaide) had seen three cases of pink disease following antral infection, and suggested upper respiratory infection as a focus.

Dr. A. P. DERHAM (Melbourne) had seen several cases with reddening of the tympanic membrane. Paracentesis did not relieve the symptoms and no pus was obtained.

Dr. F. KINGSLEY NORRIS (Melbourne) said that the parents should be told of the chronicity of the disease and reassured as to prognosis. One case of double foot-drop with peripheral neuritis had made complete recovery. Some colloidal silver preparation as an eye-drop was helpful in preventing secondary oral and nasal infection, and mercurochrome was less painful than iodine on the fingers.

Mr. P. L. HIPSLEY (Sydney) read a paper on

Intussusception

He reviewed 486 cases of intussusception occurring in one hospital over 14 years, treated by ten different surgeons. The surgeons who operated in all cases had a combined mortality of 14 per cent., while those using a preliminary injection of saline per rectum had a mortality of 9.8 per cent. In his own series of 210 cases the mortality was 6.6 per cent. In a series

of 159 cases treated since 1918, 64 were reduced without operation, 32 were found reduced at operation, and 63 were unreduced. Injection had therefore reduced 60 per cent. The average duration of unreduced cases was 31 hours, as compared with 16 hours in those not requiring operation.

Many factors were concerned in intussusception. Anatomical features were: the disproportion between the diameters of the ileum and the caecum, particularly at the age at which intussusceptions occur; the greater mobility of the ileocaecal regions in infancy; the failure of rotation of the mid-gut loop, that is, the stage of fixation of the mesentery, which was commoner in males; the increased number of Peyer's patches in the lower ileum. A physiological factor was the possibility of irregular peristalsis in the ileum due to its double nerve-supply—both sympathetic and parasympathetic. Several cases had begun immediately after a fall, an occurrence which might set up irregular peristalsis. Rare pathological causes might be enteritis, dietetic errors, and neoplasms. Heredity probably played a more important part than was generally realised.

Difficulties in diagnosis were presented when intussusception occurred in enteritis and Henoch's purpura; and sometimes the surgeon might be misled by the absence of blood in the stools. This could happen when the invaginated bowel acted as a plug in the ileocaecal sphincter. The projection of bowel from the anus was sometimes mistaken for a rectal prolapse. The absence of abdominal distension in the early stages made palpation easier and helped the surgeon to diagnose reduction after rectal injection.

Mr. Hipsley gave a detailed description of the hydrostatic pressure treatment used by him. Under general anaesthetic, saline was run into the rectum from a glass container, 3 ft. 6 in. above table level, for from 3 to 4 minutes—the buttocks being pinched together to prevent fluid escape. The catheter was disconnected and the saline returned to a bed-pan. A second and then a third injection were given, the whole process taking about 10 minutes. The first return usually contained blood, the second was clearer and might contain some specks of faecal material, and the third showed more faeces and perhaps flatus—both facts indicating a probable reduction. The actual diagnosis of reduction depended on the distension of the abdomen by the saline passing into the small intestine—the circumference at the umbilicus increasing $1\frac{1}{2}$ to 2 in. Sometimes saline exuded from the mouth. If reduction occurred, but no saline passed, it was impossible to distinguish between thickened mucosa and unreduced intussusception. A small grid-iron incision was then made to verify the fact of reduction. If no operation was done, a teaspoonful of charcoal was put into the stomach by a catheter. Most of this should be recoverable five hours later by an enema. Disadvantages of the method were the possibility of (1) rupturing the intestine—this had occurred only once in 300 injections, where a small intestinal ulcer had perforated, manual pressure having been used on the abdomen—and (2) getting a false impression of reduction. In Mr. Hipsley's 64 unoperated cases this had never occurred. The advantages were that 40 per cent. of cases could be cured without operation, and nearly all cases were at least partially reduced—a grid-iron incision enabling the surgeon to complete the process. In conclusion, Mr. Hipsley recommended operation when there was no definite proof of reduction, when a partially reduced intussusception

could be felt, in recurrent cases, in a long-standing case when it was impossible to feel the tumour either before or after treatment, and in subacute and chronic cases in older children.

Dr. W. VICKERS (Sydney) said that the low mortality indicated that Mr. Hipsley's technique was good, but a less experienced surgeon might have some difficulty in being sure reduction was complete. The increased duration of anaesthesia was justified.

Dr. H. C. COLVILLE (Melbourne) considered inflamed Peyer's patches could cause spasm and initiate an intussusception, and the breast milk of late lactation might contain some irritant to lymphoid tissue.

Dr. R. DOWNES (Melbourne) had found that if a bowel resection was necessary, much less shock resulted if this was done extra-abdominally—the abdomen being temporarily closed with through-and-through silk-worm-gut sutures.

Mr. F. C. PYBUS (Newcastle) was impressed by the method and intended to try it. He thought that an oedematous patch in the bowel might initiate an intussusception, and he knew of a case where a woman suffering from angioneurotic oedema had two children who developed an intussusception.

Mr. HIPSLEY, in reply, said that the main disadvantage of extra-abdominal manipulation of an intussusception was the difficulty in telling when reduction was complete. The saline in the bowel did not tend to cause breakdown of the wound, because the partial reduction usually enabled a grid-iron incision to be used.

SECTION OF RADIOLOGY AND RADIOTHERAPEUTICS

Dr. R. A. GARDNER (Cairo) presided at a meeting of this section when Dr. J. G. EDWARDS (Sydney) opened a discussion on

Radiographic Diagnosis in Diseases of the Lungs

Nowadays, he said, no chest investigation could be considered complete without a radiographic examination carried out by a specially trained medical expert; the physician who attempted to interpret his own films would not be getting full value from the method. Physician and radiologist should make their individual examinations and then meet to correlate their findings. Fluoroscopic examination should be reduced to a minimum, being only of value in demonstrating diaphragm movements, in localising abscess or hydatid, and in the control of lipiodol instillations. He personally was in favour of the use of stereoscopic postero-anterior films for routine work, taken at 7 feet distance using 300 m.a. at 70 kv. with an exposure of about 1/30 second. Dr. Edwards said he would confine his remarks to a few conditions.

Apical Scars.—These, he said, were dense shadows at the extreme apices, common in working men, and looked upon as healed tuberculous lesions. They never appeared to break down, and if the person should develop tuberculosis it never seemed to be associated with the scarred area.

Effusions.—Atypical effusions might cause difficulty in interpretation. Interlobar effusions followed the interlobe and might assume various shapes. Some were triangular in outline and lateral films were then of value. Mesial effusions were rare, and when they occurred were usually associated with an oesophageal lesion.

Bronchiectasis.—This condition could usually be demonstrated in stereoscopic films, although it

might be overlooked if situated behind the heart or deep in the costophrenic sulci. Lipiodol instillation should only occasionally be called for and then the supraglottic route should be chosen. The amount of lipiodol should be as small as possible, otherwise a portion of lung might be "drowned."

Fibrin Bodies.—These were rounded shadows on one side of a chest which had been the site of a hydropneumothorax. On coagulation of fluid ball-like structures of varying sizes were formed which gradually disappeared after the lung had become fully expanded.

Fungus infections were rare. The only ones seen by Dr. Edwards were due to yeast or to actinomycotic infections. The former had showed a bilateral fuzziness with scattered areas of broncho-pneumonic consolidation; diagnosis was not made before death. In actinomycosis the lesion was at first localised to one lobe, later spreading in all directions. In many cases a "vesicular" appearance was typical.

Silicosis.—In conjunction with his brother Dr. Edwards had carried out extensive investigations into silicosis for the N.S.W. Government; they had found changes occurring in the lungs of rock-choppers, coal-miners, cement workers, asbestos workers, and tool grinders, the inhaled dust being dangerous in proportion to its silica content. Most authorities agreed that silicates produced no nodular fibrosis, but one silicate (that of aluminium and potassium) known as sericite had been put forward as a cause. The general opinion, however, was that it could not produce these changes by itself but that when present it hastened the action of silica in producing fibrosis. Hawkesbury (N.S.W.) sandstone contained free silica (80 per cent.), metalliferous ores (20 per cent. to 60 per cent.), and coal (2 per cent.). Coal-miners, however, frequently cut through seams of rock, and moreover sandstone dusting was used in some mines to carry down the fine coal dust which was liable to cause explosions. In this way the analyses of dusts as supplied might be misleading. Individual susceptibility might also play a part in silicosis; some men after 40 or 50 years of sandstone mining were unaffected, while others showed changes after 6 or 8 years. With a high silica content in the dust the onset of the disease was more rapid, and in lungs with damaged lymphatic circulation, whether due to tuberculosis or chronic bronchitis, the condition developed more rapidly. From other parts of the world cases of silicosis were reported after only a few years' work; this might be due to the greater prevalence of catarrhal conditions with consequent damaged lymphatic circulation and to less healthy conditions of employment abroad. The silica nodule was similar to the tuberculous nodule but never went on to caseation. The nodular fibrosis of silicosis was bilateral and spread from the hilum on each side, being somewhat more advanced on the right side. Once established the condition continued to advance even if the man was removed from his dusty occupation. The extent of the condition as shown in the film could not be taken as a guide to the worker's disability. Early stages of fibrosis might be associated with grave disability, while men with a most advanced fibrosis might show no disability.

Dr. J. O'SULLIVAN (Melbourne) stressed the importance of consultations between the physician and the radiologist. With regard to technique there were two schools of thought in Melbourne—one favouring the fixed or moving grid, the other discarding any diaphragm. He himself now used a fixed grid (Lysholm) with hard rays. Stephani (Switzerland)

also used this grid with voltages up to 150 kv. For lipiodol injections he used the method of instillation through a catheter after anaesthetising the pharynx, while controlling the injection by observation on the fluorescent screen so that the oil could be directed to the required area. He quoted a case in which a small ulcer was observed on the screen but could not be identified in the films. This small ulcer proved to be an early carcinoma. Dr. O'Sullivan then showed a series of slides made from X ray films to illustrate his remarks.

Dr. BURNETT CLARKE (Brisbane) did not favour fluoroscopic examination of lungs. Some physicians who brought their patients for examination seemed to forget that at least ten minutes in a dark-room was required for accommodation of vision before screening. A full clinical examination should be made before a patient was referred for X ray examination.

Dr. A. J. COLLINS (Sydney) said that in pulmonary tuberculosis it was difficult to decide when the lesion was healed. He quoted the case of a woman who after spontaneous pneumothorax had no demonstrable lesion but three years later had a small calcified area which had remained unchanged. This patient had since had several children without recrudescence. Another patient showed no demonstrable lesion one year after a spontaneous pneumothorax but four years later had developed calcification at the apex of one lung and tubercle bacilli in the sputum. A year later further calcification had taken place.

Dr. F. GWYNNE (Auckland, N.Z.) said that in New Zealand silica and sericite occurred in varying proportions in dust from mines. One district had a high silica content but a low incidence in silicosis, and at present the reason for this was obscure.

Dr. C. BADHAM (Sydney) said that the pathology of dust diseases was at present on a poor footing. He had been conducting animal experiments to reproduce working conditions, and although his guinea-pigs showed gross macroscopic lesions following the inhalation of quartz dust he had not yet succeeded in proving that the sericite content bore a direct relationship to the extent of the lesions.

Dr. H. R. SEAR (Sydney) submitted some notes on
Diagnosis of Bone Tumours

Early differentiation of the type of tumour was of great importance from the aspect of treatment. All available information, such as the history and the results of any pathological examinations, should be made available to the radiologist. A much more extensive X ray examination might be required than had been requested. For example, in a child referred for X ray examination the skull appeared to be normal but secondary neuroblastomata were observed in the femora. A typical history was obtained and the red cell count was found to be 2,670,000. A hopeless prognosis was given. The child was then taken to another physician and referred to another radiologist; the latter was only asked to X ray the skull which showed no abnormality. Two months later the child died. Again, a man referred for examination of a swollen and inflamed finger was diagnosed as having osteomyelitis. Six weeks later the patient died in another hospital with metastases from a Ewing's tumour. On re-examination of the original films with a magnifying glass there was a suggestion of a fine periosteal deposit arranged at right angles to the shaft.

Dr. Sear discussed bone tumours in four groups according to the part of the bone mainly involved—

that is, showing changes (a) mainly periosteal; (b) mainly cortical; (c) mainly central; (d) composite changes. In connexion with group (a) he discussed secondaries from primary bronchogenic carcinoma, extraperiosteal fibrosarcoma, secondary neuroblastoma, and the lacework type of specific periostitis. In group (b) the conditions causing most difficulty in diagnosis were hydatid, lymphadenoma, and certain metastases, such as hypernephroma. In group (c) showing central involvement there were four main lesions likely to cause errors in diagnosis: (1) hydatid (central type); (2) lipoid histiocytosis, the general massive type, also the changes described by Schuller in the skull and by Gaucher in the long bones—either one or both combined; (3) central cartilaginous masses (allied to Ollier's disease but not a true Ollier's disease); (4) secondary hypernephromata. The composite group, said Dr. Sear, was more complex, according to the following Table:—

Lesion.	Lesion to be excluded.
1. Ewing's tumour	.. (a) Osteomyelitis; (b) syphilis; (c) tuberculosis; (d) Garré's sclerosing non-suppurative osteomyelitis; (e) Engelmann's disease.
2. Paget's disease	.. (a) Supervention of sarcoma on same; (b) prostatic secondaries; (c) "ivory" vertebrae.
3. Lipoid histiocytosis (Gaucher's with massive destruction).	(a) Tuberculosis; (b) metastases.
4. Secondary neuroblastoma	(a) Osteomyelitis; (b) chloroma.

Dr. Sear showed numerous slides of X ray films to illustrate these conditions. He also drew attention to the comparative rarity of the supervention of sarcoma upon Paget's disease in Australia. In America 14 per cent. of cases of Paget's disease were reported to have developed sarcoma, in Germany 5 per cent., while his own figures only showed 2 per cent.

Dr. V. McDOWELL (Brisbane) stressed the importance of obtaining full clinical notes of cases, and pointed out that in some conditions a definite diagnosis could only be arrived at after observing the reaction of the tumour to deep therapy—e.g., Ewing's tumour. He considered that a comprehensive classification of bone tumours was needed to avoid the present confusion in nomenclature. He agreed that the incidence of sarcoma supervening on Paget's disease was not nearly so common in Queensland as it appeared to be abroad.

Dr. COLIN MACDONALD (Melbourne) agreed with Dr. Sear that it was the secondary deposit confined to one bone which caused mistakes in diagnosis. Such unusual bone changes were more frequently due to secondary carcinoma than to primary sarcoma. Most bone tumours were epiblastic in origin, although they were formerly considered to be mesoblastic. With regard to Ewing's tumour he said that at the Children's Hospital, Melbourne, during the last ten years he had only seen one completely proven case.

Dr. HOWARD PRAAGST (Melbourne) said that in his experience Ewing's tumour occurred most commonly in adults in the ribs. When it occurred in the long bones he found that the proportion in the tibiae to the tarsal bones was 15:1. Hydatid of bone was very rare in Australia, especially when compared with the frequency of hydatid cysts occurring in other parts of the body; in the last ten years only nine cases of bone hydatid had been seen at the Royal Melbourne Hospital. Dr. Praagst referred also to the frequency with which negative Casoni and complement-fixation tests were obtained in the presence of proven hydatid disease.

MEDICINE IN THE COLONIES

THE work of the Government medical services in the various parts of the British Commonwealth is of fundamental importance, and we are glad to see once more a supplement to the *Tropical Diseases Bulletin* which summarises in a single volume¹ the information contained in the various annual medical and sanitary reports from British colonies, protectorates, and dependencies. This supplement, the fifth of its kind, is fuller than previous issues, and contains an account of the activities of 55 medical services. The summaries follow the same general arrangement as before, giving for each colony the year's record of vital statistics, maternity and child welfare work, school hygiene, general sanitation, housing, and town-planning, followed by particulars of the incidence of the more important diseases and the measures taken locally to combat them. New features are the addition of short prefatory notes on the geographical positions and areas of the colonies concerned, and of a useful index of names and subjects.

MALARIA.

Of the major tropical diseases malaria presents the most urgent problem. Control measures suited to one region may prove quite unsuitable in other localities where circumstances and conditions are different. This difficulty is well illustrated by the experience in the Windward Islands where certain parts are mainly infested by anopheles breeding in the ravines, which are numerous. In times of heavy rain the larvæ are washed out to sea and the malaria incidence falls; in dry weather pools are left in the ravines and breeding goes on unimpeded. In the flat cane lands in the river valleys however quite the reverse holds good; here the greater the rainfall the higher the incidence. A different problem is present in Trinidad, where brackish water swamps are well-recognised zones of high endemicity. Here it was found that if sea-water was admitted to maintain the salinity at about 80 per cent. of "equatorial sea-water," breeding of anopheles ceased. The sanitary engineer therefore carried out work to replace the stagnant brackish water by moving sea-water in parts where reclamation by filling was impracticable; he notes however that wherever practicable the latter is the best method of eradicating anopheles breeding.

Antimalarial oils for use in anopheles control have been investigated in Kenya. Tests on oil fractions ("cracked" oil) indicate that the important larvicidal properties depend upon the presence of certain quantities and qualities of residue produced by distillation above 270° C. Borneo fuel oil appears to be slightly superior to Persian, and as a good spreader a mixture of Borneo fuel 10 parts and Solar oil 1 part is recommended in dosages of 18 to 20 gallons per acre at intervals of 7-8 days.

The question of the use of drugs other than quinine in malaria treatment and as a prophylactic in malarious centres has also been investigated. In the Federated Malay States Dr. R. T. B. Green has tested Atebrin to determine the advisability of substituting it for quinine in the treatment of malaria on rubber estates among ambulatory outdoor patients.

He concludes that "atebrin possesses the advantage that it can be given in a daily curative dose at one muster and is willingly taken by the labourers without fear of cinchonism." For ordinary general treatment however he sees no special advantage in its use in place of quinine. Dr. Green also tested totaquina which he found to be slightly less efficient than quinine in the immediate treatment of acute malaria. In Hong-Kong Quinoplasmoquine has been tried in place of quinine as a prophylactic in one of the New Territories police stations at Tsun Wan. During the half year of trial no case of malaria was admitted to hospital from this station, although of eight men who were transferred from it, and therefore ceased to take the drug, three subsequently went down with malaria.

SOMIASES

Work on trypanosomiasis has been carried on in most of the African Colonies. Preventive measures have mainly taken the form of mass treatment of the people and localised protective undertakings against the tsetse-fly. In East Africa control measures have been agreed upon by the governments of Tanganyika Territory and the Uganda Protectorate to prevent natives infected with *Trypanosoma rhodesiense* in Tanganyika from crossing over to Uganda. In Nyasaland the medical entomologist Dr. W. A. Lamborn has continued his investigations into the possibilities of vectors other than tsetse acting as transmitters of trypanosomes. His experiments with *Bdellolarynx latifrons* show that these flies are sufficiently long-lived for the development of trypanosomes within them and that their blood-feeding voracity adds immensely to their potentialities as carriers of disease-producing organisms.

Turning to diseases due to helminths, schistosomiasis is said to have been almost unknown in Bechuanaland before 1932, but in 1933 there was a widespread infestation among the tribal school-children at Mochudi, 101 children having contracted infection from residual pools in the Marico and Notwani rivers, the snails not having been washed away as usual because of a serious drought. By way of prevention, heglig berries (*Balanites aegyptiaca*), which abound in the endemic areas in the Sudan, have been found by Archibald to be lethal to the cyclops, the schistosome-carrying mollusc, without interfering with the potability of the water. In view of this observation these trees have now been planted round a village pond near Katsina in Nigeria and experiments are to be made there to test their efficacy in that part of Africa. Interesting and important research on schistosomiasis has been carried out by Dr. A. R. D. Adams in Mauritius where the intermediate molluscs have hitherto evaded discovery. Dr. Adams has shown that, under conditions resembling those present in nature in irrigation canals in Mauritius, *Bulinus forskali* thrived and became heavily infested with bifid-tailed cercariae, while none of the other species employed as controls were attacked. The evidence implicating this particular mollusc as carrier in Mauritius is therefore very strong.

The ophthalmic report from the Sudan contains an interesting account of investigations on "Sudan blindness" by Dr. Joseph Bryant who finds that this condition is a localised disease associated with people who live along rocky streams. Where "Sudan blindness" has been found there also *Onchocerca volvulus* has been found; but Dr. Bryant regards

¹ Tropical Diseases Bulletin, 1935, vol. xxxii. Supp. Medical and Sanitary Reports from British Colonies, Protectorates, and Dependencies for the Year 1933, summarised by H. Harold Scott, M.D., F.R.C.P., D.P.H., Director of the Bureau of Hygiene and Tropical Diseases. Pp. 280. 7s. 6d.

"Sudan blindness" and onchocerciasis as distinct entities with similar distribution, for in the former the condition is bilateral and night blindness is a constant symptom, whereas onchocercal keratitis is occasionally unilateral and in its early stages vision is better in poor light than in sunshine.

The supplement is full of meat; we have only been able to sample it, picking out an item here and there of special interest. The summary of vital statistics—birth, death, and infant mortality-rates—for each of the colonies, with the corresponding figures for the previous year; records progress and the whole provides a ready reference to the activities of the medical services under British rule. For the members of the Colonial Medical Service, past, present, and future, it is an indispensable handbook.

MEDICINE AND THE LAW

The Practitioner's Right to His Own Name

THE *British Medical Journal* has lately published several interesting letters on the grievance of practitioners whose names are used by manufacturing chemists. The correspondence began with a letter from Dr. Hugh MacLean. Some years ago he described in the medical press his method of treating certain gastric lesions by means of alkalis and he gave the formula of a powder which he had found efficacious in cases of gastric ulcer. He can fairly claim to have followed the best professional tradition in having made his conclusions and his experience available to all practitioners to be tested or used in the common interest. He had justifiable ground for annoyance when firms of manufacturing chemists made up and marketed a powder and took liberties with his name in advertising their wares. At his instance the B.M.A. made representations. Some firms abandoned the use of his name; others took no notice. His recent letter complains that one firm, Macleans Ltd., has lately issued a prospectus wherein it claims proprietary rights in the "Maclean Brand Stomach Powder"; the firm, he says, adopted this name for the powder after strong protests on his behalf had induced it to cease describing the powder as made up "according to the formula of Professor Hugh MacLean." He contends that members of the public will inevitably draw the entirely false inference that he is in some way financially interested in the manufacture and sale of the powder. He has apparently been advised that he has no legal remedy for his annoyance except a possible action for libel which, whatever its outcome, would involve him in expense, loss of time, and undesired publicity. He asks if it would not be possible to introduce legislation to prevent the exploitation by unscrupulous persons of a prescription published in the medical journals. As he observes, the widespread sale of a remedy prescribed for use in certain conditions may do harm if used in other conditions, and in any case it is grossly unfair that a similarity of name should enable a firm to claim some special virtue in the art of dispensing the powder whereof he published the formula. Other practitioners, it seems, have suffered similarly by the unauthorised association of their names with druggists' preparations. Has a professional man, they ask, no right to restrict the use of his name?

It is a great pity that the case of Dockrell v.

Dougall went the wrong way in 1899. The vendors of a liquid named "Sallyco" advertised that Dr. Morgan Dockrell was prescribing Sallyco as an habitual drink; "Dr. Dockrell," added the advertisement, "says nothing has done his gout so much good." Unfortunately the jury found that the words were not a libel. The plaintiff failed to obtain any finding that the words were likely to injure him in his profession, although it seems clear that the jury might have held that they suggested that he had violated professional ethics by lending his name to puff a remedy in which he had an interest. Dr. Dockrell then had to argue that he had a property in his name *per se*. Here the Courts were definitely against him. "If it could be made out," said Lord Justice Smith, "that a man has a property in his own name *per se*, and there has been an unauthorised use of his name, the plaintiff might be entitled to an injunction; in order, however, to be entitled to an injunction, it seems to me that the plaintiff must show injury to himself in his property, business or profession." If the case of *Dockrell v. Dougall* went the wrong way, the more recent case of *Tolley v. Fry* holds out some better hope. Mr. Tolley, a noted amateur golfer, was stupidly caricatured on the advertisement of a brand of chocolate. He obtained damages for libel on the ground that this use of his name reflected upon his amateur status, since it implied that he had, for reward, allowed his portrait to be used for advertising purposes and had thus prostituted his reputation as an amateur. In the House of Lords Lord Hailsham thought it would be open to a jury to assume that no reputable firm of chocolate-makers would have the effrontery and bad taste to take the name and reputation of a well-known man for an advertisement commending their goods without first obtaining his consent. Mr. Tolley held his verdict and the analogy might serve to secure a verdict for a medical practitioner whose name has been abused in circumstances which suggest that he has broken the ethical rules of his profession. Dr. Hugh MacLean's particular annoyance is the use of his name by a commercial firm of a similar name. Need he allege fraud if he seeks a legal remedy? Can he show that the firm's conduct is calculated to deceive? Or will the court pessimistically reply, as Lord Loreburn did in the *Dunlop* litigation in 1907, "I cannot speculate on the degree of unwariness which would induce the confusion necessary to support the appellants' case"? At the common law, according to Jessel, M.R., in *Merchant Banking Co. of London v. Merchants' Joint Stock Bank* (1878), anybody might use his own name for the purpose of trade, or he might trade under any fancy name he chose, "and the mere fact of somebody else having the same name and carrying on trade under that name does not prevent another from doing the same." In *Turton v. Turten* (1889) Lord Justice Cotton, after citing those words, added that "when a man knows that the natural consequences of what he is doing is to represent his goods as the goods of somebody else, then it is wrong on his part to continue that act." Presumably Dr. MacLean's main difficulty is that he is not a rival trader of Macleans Ltd. The Companies Act prohibits a company from being registered by a name which is identical with that of an already registered company or which so nearly resembles that name as to be calculated to deceive. A company, it has been decided, has not the same freedom to trade under a name already identified with an existing business as an individual might have. But unfortunately a medical practitioner has not the same rights as a

trading firm might have if he takes legal action to protect the use of his name.

Somehow it has happened that the law is ready to defend rights of privacy with alacrity where a plaintiff's property is concerned, but will give little help against interference with the personal seclusion of the plaintiff himself. Thirty years ago in *Corelli v. Wall* Miss Marie Corelli sought an injunction to restrain the defendant from selling (without her authority) coloured post cards containing indifferent portraits of her in imaginary incidents of her life. The court gave her no remedy either for libel or for the unauthorised publication of a bad portrait of herself. In *Tolley v. Fry* Lord Justice Greer had no doubt that the defendants, in publishing their advertisement without first obtaining Mr. Tolley's consent, were guilty of an act for which there ought to be a legal remedy. We can apply these words with emphasis to the act of which Dr. MacLean complains. There is probably a widespread feeling that the invasion of personal privacy requires to be checked. Public personages, politicians, and others may have to suffer the publicity which they sometimes move half-way to meet; the professional man, if he has no such ambitions, should have a right to his own name.

Fine for Unlawful Description as "Manipulative Surgeon"

The Paignton magistrates dealt on Nov. 15th with the case of Captain Horace Barrow which had been sent back to them by the Divisional Court (see THE LANCET, Nov. 2nd, 1935, p. 1023) with a direction to convict. They imposed a fine of £10 with an order to pay £10 10s. costs. In announcing the decision, the chairman of the bench remarked that their former decision had been reached by a majority and was contrary to advice tendered to them by the clerk to the justices. The magistrates, it may be recalled, had originally refused to convict and had awarded Captain Barrow a substantial sum for costs. This award the Divisional Court annulled.

MEDICAL MEN IN PARLIAMENT

WE miss some familiar faces from our Parliamentary gallery and there are no new ones. In two constituencies medical candidates were opposing one another: at Bury neither was successful; at Reading Dr. Howitt's success, which we all welcome, unfortunately means the defeat of Mr. Somerville Hastings, whose chairmanship of the chief health committee of London would in itself have qualified him for a place in the deliberative assembly. Many besides doctors will regret Dr. Addison's absence from the new House, and we offer sincere condolence to Dr. O'Donovan and to Sir John Worthington on their defeat at Stepney and the Forest of Dean. A number of men and women in active general practice put up plucky fights, but there are very few general practitioners among those who retain their seats. It looks as though Parliamentary life under existing conditions is not available for the practising doctor, however much it may be for the practising lawyer. Those who will represent medicine in the new Parliament cover all political parties and will continue to meet as a medical parliamentary committee under the chairmanship of Dr. Howitt.

ANALYSIS OF VOTING

The list of medical candidates here given shows the individual position at the poll and the number of votes registered. The sign † indicates membership of the last House of Commons, ‡ membership of a previous Parliament, and * that the candidate has contested this or some other seat before.

Constituency.	Name.	Position at poll.	Votes registered.
<i>Universities.</i>			
London	Sir Ernest Graham-Little†	1	(1) Nat. Ind., 8,958 (2) Lab., 3,918 C., Unopposed.
Queen's, Belfast..	Prof. T. Sinclair†		
<i>London Boroughs.</i>			
Bermondsey (West)	Dr. Alfred Salter†	1	(1) Lab., 12,603 (2) L. Nat., 7,674
Camberwell (Dulwich)	Dr. C. R. Cooke-Taylor*	3	(1) C., 16,870 (2) Lab., 7,142 (3) L., 3,743
Hammersmith (South)	Dr. J. D. Cooke†	1	(1) C., 15,377 (2) Lab., 9,399
Paddington (North)	Dr. G. de Swietochowski	3	(1) C., 17,153 (2) Lab., 9,925 (3) L., 1,795
St. Marylebone ..	Dr. Elizabeth Jacobs	2	(1) C., 31,183 (2) Lab., 8,008
St. Pancras (South-East)	Dr. S. W. Jeger	2	(1) C., 11,976 (2) Lab., 10,340 (3) L., 1,181
Stepney (Mile End)	Dr. W. J. O'Donovan†	2	(1) Lab., 13,177 (2) C., 8,839
Wandsworth (Central)	Sir Henry Jackson†	1	(1) C., 14,728 (2) Lab., 10,405
<i>English Boroughs.</i>			
Bury ..	Dr. Edith Summerskill	2	(1) C., 18,425 (2) Lab., 12,845
	Dr. D. McIntosh Johnson	3	(3) L., 6,065
Manchester (Rusholme)	Dr. Percy McDougall*	3	(1) C., 19,678 (2) Lab., 9,258 (3) Ind., 2,325
Newcastle-on-Tyne (West)	Mr. J. W. Leech†	1	(1) C., 25,326 (2) Lab., 17,082
Preston (2 seats)	Dr. R. A. Lyster*	3	(1) C., 37,219 (2) C., 36,797 (3) Lab., 32,225 (4) Lab., 31,827
Reading ..	Dr. A. B. Howitt†	1	(1) C., 27,540 (2) Lab., 22,919
	Mr. Somerville Hastings†	2	(3) L., 2,685
Smethwick ..	Dr. C. W. Brook*	2	(1) C., 16,575 (2) Lab., 15,023
Tynemouth ..	Dr. S. Segal	2	(1) C., 16,003 (2) Lab., 10,145 (3) L., 7,868
<i>English Counties.</i>			
Gloucester (Forest of Dean)	Sir John Worthington†	2	(1) Lab., 16,768 (2) Nat. Lab., 12,337
Herts (St. Albans)	Sir Francis Fremantle†	1	(1) C., 33,743 (2) Lab., 16,233
Lincoln (Horncastle)	Dr. H. C. Haslam†	1	(1) C., 17,594 (2) Lab., 7,982
Wilts (Swindon)	Rt. Hon. C. Addison†	2	(1) C., 20,732 (2) Lab., 19,757
<i>Welsh Counties.</i>			
Brecon and Radnor	Dr. L. Haden Guest†	2	(1) Nat. Ind., 22,079 (2) Lab., 19,910 Lab., Unopposed
Carmarthen (Llanelli)	Dr. J. H. Williams†		
Denbigh (Denbigh)	Dr. J. H. Morris-Jones†	1	(1) L. Nat., 17,372 (2) L., 12,329 (3) Lab., 4,963
<i>Scottish Burghs.</i>			
Edinburgh (Central)	Dr. R. A. Barlow	3	(1) C., 12,612 (2) Lab., 9,659 (3) L., 1,086
Glasgow (Kelvin-grove)	Rt. Hon. Walter Elliot†	1	(1) C., 15,109 (2) Lab., 14,951 (3) L., 1,004
<i>Scottish Counties.</i>			
Aberdeen and Kincardine (Central)	Dr. W. S. Russell Thomas*	3	(1) C., 14,697 (2) Lab., 6,128 (3) L., 5,873

C. = Conservative. Ind. = Independent. L. = Liberal. L. Nat. = Liberal National. Lab. = Labour. Nat. Lab. = National Labour. Nat. Ind. = National Independent.

† photographs are due to—Fandyk (Dr. Dr. Howitt); Bassano (Rt. Hon. W. E. Son (Dr. Leech); Alfred Haley (Dr. Morris-Jones); Allison (Prof. Sinclair).



DR. J. D. COOKE



MR. WALTER ELLIOT



SIR FRANCIS FREMANTLE



SIR ERNEST GRAHAM-LITTLE



DR. H. C. HASLAM



DR. A. B. HOWITT



SIR HENRY JACKSON



MR. J. W. LEECH



DR. J. H. MORRIS-JONES



DR. ALFRED SALTER



PROF. THOS. SINCLAIR



DR. J. H. WILLIAMS

IRELAND

(FROM OUR OWN CORRESPONDENT)

PROPOSED PENSION SCHEME FOR NURSES

A Bill to establish a scheme of pensions for nurses and midwives was introduced to the Senate of the Irish Free State last week by Senator Dowdall, with the backing of Senator Sir Edward Coey Bigger among others. The Bill provides that a Pensions Endowment Trust is to be established by a sum of £250,000 out of the sums in the hands of the National Hospital Trustees which have accrued from the Hospitals Sweepstakes. Every nurse and midwife is to contribute 6d. a week toward a Nurses' Pensions Fund, and every hospital is to contribute 6d. a week to the same Fund in respect of every probationer nurse in training. To this fund will go also all interests, dividends, and income arising from the investment of the Pensions Endowment Trust. A nurse is defined as "a woman who has adopted nursing as her sole mode of livelihood and who is registered by the General Nursing Council of Saorstát Eireann," and a midwife as "a person who carries on no other occupation than that of midwife and who is certified by the Central Midwives Board of Saorstát Eireann." A period or periods in the aggregate of twenty years' work as a nurse or midwife is necessary for qualification for a pension, and the pension will begin when the nurse or midwife resigns her occupation. The amount of the pension will be £30 a year, or such greater sum as the Minister may from time to time determine.

Unfortunately it is the fact that it is more difficult for nurses to make adequate provision for old age than it is for other working women. In the first place the working life is shorter. A nurse at fifty or over, unless she has been fortunate enough to get into some permanent service, is likely to find herself both unemployed and unemployable. Again, despite the importance of their work to the community and the trying conditions in which much of their work is done, nurses are, in comparison with other working women, much underpaid. Hitherto the various charitable funds which have been got together to assist nurses in financial difficulty, while they have helped individual cases, have probably tended to perpetuate the practice of under-payment. It is doubtful whether a provision of pensions by such a scheme as is put forward in Senator Dowdall's Bill would not, in the event, do more damage than good to the interests of the nurses themselves by postponing the establishment of the work of nursing on such a financial basis as would enable nurses, like other skilled workers, to make provision for the time of their retirement. It is anomalous to set up a public scheme of pensions for one class of workers while other workers whose services are equally essential to the community have no such provision made for them. If such a scheme is to be set up it would seem fairer to endow it from public funds rather than from funds accumulated by the voluntary hospitals for the treatment of the sick. Already there have been too many inroads on the Sweepstakes Funds for purposes foreign to their original purpose. It is often forgotten that the sweepstakes were promoted and established by the authorities of the voluntary hospitals to provide funds for those hospitals. The Government contributed nothing, and in fact takes 25 per cent. of the proceeds in return for giving permission to promote the sweepstakes. In recent years it has also made the previously rate-

supported institutions parasitic on the scheme so far as building and improvements are concerned. There does not seem to be any justification for making other extraneous objects dependent on the Sweepstakes Funds.

BUCKSTON BROWNE DINNER

ROYAL COLLEGE OF SURGEONS OF ENGLAND

OF the two speakers at the Buckston Browne dinner at the Royal College of Surgeons on Nov. 14th the first was the president, Sir CUTHBERT WALLACE. The greatest event of the College year, he said, had been Sir Holburt Waring's journey to Australia to open the new buildings of the Royal Australasian College of Surgeons. Examiners for the primary fellowship had also travelled far afield, and 35 of 68 candidates had passed this examination last December in Australia and New Zealand, while 21 out of 60 had passed in Madras. This winter it was hoped to hold another examination in India. At home, with the Royal College of Physicians, diplomas had been instituted in anaesthetics and child welfare. Another memorable feature of the year had been the fate of the Osteopaths Bill in the House of Lords—a fate largely attributable, he thought, to the efforts of the College and especially of Mr. Elmslie, Mr. Souttar, and Dr. Graham-Hodgson. After speaking of the lecture and scholarship founded in memory of Sir Robert Jones, and of arrangements by which annual scientific meetings are to be held jointly by British and French surgeons alternately in France and this country, the president turned to changes in the College staff, including the appointment of Mr. A. J. E. Cave as assistant conservator of the museum and of Mr. L. W. Proger as pathological curator. He expressed, amid applause, the thanks of the College to Mr. T. W. P. Lawrence who retired from his post as acting pathological curator last March. The maintenance of the museum and of research were two of the main tasks of the College, he continued, and for the museum new specimens were urgently wanted: at present only about 150 specimens were received each year. In the department of research investigations on shock were being made which had been quoted far and wide; and—an encouraging sign—Dr. Beattie, the conservator, was getting applications for bench space from men overseas. Also one of the Beit fellows had been sent to work at the College. The laboratories on the top floor could and should be made perfect, and this could be done, with suitable endowment, at a cost of a mere £100,000. Meanwhile the research farm at Downe had proved of inestimable value.

Sir BUCKSTON BROWNE, when his health had been drunk, expressed his pleasure at seeing his guests. Medicine, he felt, was gradually coming into its own as the highest of professions—the highest because it is concerned with the human body from which all human activities spring. The nineteenth century must go down as the most important of all in the history of man because it brought a sense of the importance of the body. The world would never again be as it was in 1859 when the "Origin of Species" appeared: "man realised what he was, where he came from, and that he had prospects before him." The College of Surgeons had a fine tradition in biology, and the work of Hunter and Jenner had been continued by Arthur Keith. But formerly presidents and councils did not take much interest in this side of its work, and it was not until ten years ago that money was voted and rooms arranged for the more elaborate forms of biological research. It was then that those in charge began to long for the more spacious days of John Hunter when within two or three miles of Lincoln's Inn-fields, in lovely country, a farm could be found where experimental animals could be kept in healthy surroundings. This was where he had been able to

help. "The College," said Sir Buckston, "is a stern mistress. But at last she took me to her bosom, and although we were both of mature age the union has been fruitful and a strong and lusty child has been born." Already splendid work had been done at the research farm at Downe under the control of the president and council, the conservator, and the resident master, Sir Arthur Keith. He begged his hearers to go to the farm, see for themselves, and do their best to encourage public support for scientific research rather than for magic and superstition.

At the end of the dinner the president announced that those present included the "youngest member of the College," admitted that afternoon. This was Mr. Ernest Theophilus Roberts, M.D. Edin., 1889, who had attempted the Conjoint examination in 1886 but had only succeeded in passing in midwifery and medicine. During retirement Dr. Roberts had employed some of his leisure in preparing for the final surgical examination, and had that day completed it.

After the dinner there was an exhibition of letters written by John Hunter when he was naval surgeon with the Belle Île expedition. The guests then gathered in the lecture theatre where Dr. Beattie had arranged a cinematograph show including films of the vocal cords in health and disease and the first talking-pictures to be seen at the College. The film of the opening of the Buckston Browne Research Farm presented many familiar figures; but none so familiar, perhaps, as Felix the Cat, who concluded the entertainment.

The following is a list of those present:—

Council.—Sir Cuthbert Wallace (president). Prof. A. H. Burgess (Manchester), and Sir Charles Gordon-Watson (vice-presidents). Sir Holburt Waring, Prof. E. W. Hey Groves (Bristol), Mr. F. J. Steward, Mr. C. H. Fagge, Mr. W. Sampson Handley, Mr. Wilfred Trotter, F.R.S., Mr. Victor Bonney, Prof. G. Grey Turner, Mr. Hugh Lett, Mr. R. G. Hogarth (Nottingham), Prof. R. E. Kelly (Liverpool), Prof. Graham Simpson (Sheffield), Mr. A. E. Webb-Johnson, Mr. G. Gordon-Taylor, Mr. R. C. Elmslie, Mr. L. R. Braithwaite (Leeds), Mr. H. S. Souttar, Mr. W. Girling Ball, and Mr. Seymour Barling.

Fellows.—Mr. A. S. Blundell Bankart, Mr. L. R. Broster, Sir Buckston Browne, Mr. F. F. Burghard (Burton-on-Trent), Mr. H. Jackson Burrows, Mr. Robert Cooke (Bristol), Mr. R. K. Debenham (Birmingham), Mr. Harvey Jackson, Mr. R. Watson Jones (Liverpool), Mr. J. C. Leedham-Green, Mr. O. V. Lloyd-Davies, Mr. G. Percival Mills (Birmingham), Mr. John Morley (Manchester), Mr. W. G. Mumford, Mr. Lionel Norbury, Mr. Michael J. Smyth, Mr. W. G. Sutcliffe, Mr. H. W. Symons (Leeds), Mr. H. Bell Tawse (Nottingham), Mr. Cecil Wakeley, Colonel J. M. Weddell, Mr. James Whillis, and Mr. N. G. Wigram.

Members.—Dr. G. G. Allan, Mr. L. D. Bailey, Dr. Frederick Barker (Parkstone), Dr. P. G. A. Bott, Mr. Arthur Bulleid, Dr. F. G. Caley, Dr. A. E. Carver (Torquay), Mr. F. L. Cassidy, Dr. F. B. Chavasse (Liverpool), Mr. W. H. Coldwell, Dr. Macdonald Critchley, Dr. T. M. Davie, Dr. H. P. S. Devitt, Dr. T. F. Fox, Mr. C. R. Edwards, Dr. David Forsyth, Dr. E. P. Furber, Dr. Harold Gardiner-Hill, Dr. L. P. Garrod, Dr. A. Hope Gosse, Dr. Arnold Gregory (Manchester), Colonel A. E. Hamerton, Dr. T. L. Hardy (Birmingham), Dr. T. H. Harker (Southport), Mr. A. G. Hewer, Mr. C. T. Holford (Burton-on-Trent), Dr. N. G. Horner, Dr. J. B. Howell, Dr. J. T. Hunter, Dr. A. G. Maitland-Jones, Dr. Geoffrey Marshall, Dr. D. J. Martin (St. Leonards), Mr. William Neil MacLay, Dr. H. L. Oldershaw, Dr. T. Wilson Parry, Dr. Norman L. Price (Bristol), Mr. L. W. Proger (pathological curator), Dr. R. J. V. Pulvertaft, Dr. H. J. Roper (Leeds), Dr. M. Radford, Dr. E. T. Roberts (Glasgow), Dr. W. H. Scott-Easton (St. Mary Cray), Mr. E. T. Shorland (Westbury), Dr. J. H. Sheldon (Wolverhampton), Dr. G. Evan Spicer, (St. Albans), Dr. P. B. Spurgin, Mr. G. V. Steward (Fleet), Mr. Edgar Olive Turner (Great Missenden), Dr. G. de Bec Turtle, Mr. H. Stobie, Mr. H. S. Wachter, Dr. Cecil Wall, Dr. E. Welch (Leeds), and Dr. L. E. H. Whitty.

Others present.—Dr. J. W. McNee, Mr. H. H. Rev (secretary to the Examining Board), Dr. John Beattie (conservator and director of research), Mr. W. R. Le Fanu (librarian), Mr. Kennedy Cassels (secretary), and Mr. A. J. E. Cave (assistant conservator).

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt.-Comdrs. J. V. Williams to *Galatea*, and as Squadron M.O.; W. M. Greer to *Despatch*; and E. T. S. Rudd to *Victory*, addl. for R.N.B.

Surg. Lt. C. G. Owen to *Despatch*.

ROYAL ARMY MEDICAL CORPS

Lts. (on prob.) secd. under Art. 213. Royal Warrant for Pay and Promotion, 1931 (vide THE LANCET, Nov. 16th, 1935, p. 1146): W. N. L. Haynes, J. F. Wilson, J. R. Kellett, C. P. Stevens, J. H. Caverhill, K. G. F. Mackenzie, and J. A. Farfor.

TERRITORIAL ARMY

Supernumerary for service with the O.T.C.—Lt. H. R. Thompson to be Capt. Maj. J. Whillis (empld. Durham Univ. Contgt., Sen. Div., O.T.C.) resigns his commn. and retains his rank, with permission to wear the prescribed uniform.

Capt. N. H. Hammer to be Maj.

Capt. P. Malpas resigns his commn.

Lt. A. P. McEldowney to be Capt.

J. L. Swanston (late Cadet, Brighton Grammar School Contgt., Jun. Div., O.T.C.), to be Lt.

J. G. Scott (late Offr. Cadet, Glasgow Univ. Contgt. (Med. Unit), Sen. Div., O.T.C.), to be Lt.

T. Seager and C. K. Sconce to be Lts.

The King has conferred the Efficiency Decoration upon the undermentioned Officers under the terms of the Royal Warrant dated Sept. 23rd, 1930: Lt.-Col. J. F. O'Grady, and Maj. D. Stewart, R. J. W. A. Cushing, A. C. MacDonald, M.C., and W. A. Jackman.

ROYAL AIR FORCE

Flight Lt. A. H. Barzilay relinquishes his commission on appointment to a permanent commission in the Indian Medical Service.

Dental Branch.—Flight Lt. R. H. Matthews to R.A.F. General Hospital, Himaidi, Iraq.

INDIAN MEDICAL SERVICE

Col. E. C. Hodgson, D.S.O., retires.

Lt.-Col. J. Scott, D.S.O., O.B.E., Surgeon to the C.-in-C., is proceeding on leave and vacates his appointment.

The undermentioned appts. are made:—

Majs. to be Lt.-Cols.: S. Nag; J. Rodger, M.C.; and G. B. Hanna.

To be Capt. (on prob.): A. H. Barzilay, R. K. Muir, and P. M. McSwiney.

To be Lts. (on prob.): J. A. L. McCullough, D. J. P. Parker, C. L. Ash, T. C. McG. Morrison, V. D. Gordon, B. de Burca, D. R. Nicol, J. Morgan, and T. Sommerville.

Lts. C. K. Byrnes and G. F. Adye-Curran are restd. to the Estbt.

Cpts. A. M. Khan, P. P. Chowdry, H. K. Handoo, P. N. Sathe, D. N. Basu, and H. S. Ahluwalia relinquish their temp. commns.

COLONIAL MEDICAL SERVICE

Dr. R. Calderwood, Miss M. H. James, M.B., and Dr. A. L. Shield have been appointed Medical Officers, Malaya; Miss V. R. Sharp, M.R.C.S., Medical Officer, Zanzibar; and Miss S. M. Young, M.B., Medical Officer, Health Department, Palestine.

PARKES MEMORIAL PRIZE.—Surgeon-Lieutenant J. L. S. Coulter, R.N., has been awarded the Parkes Memorial prize for 1935, for his essay on preparation for tropical service in the Royal Navy. The prize is awarded annually to the writer of the best essay on a subject connected with naval or military hygiene.

PANEL AND CONTRACT PRACTICE

Compromising Silence

A PATIENT'S widow told the following story to a medical service subcommittee. Her husband, who had been treated by Dr. A. for rheumatism over a period of three months, was in extreme pain on a particular Sunday. She called at the surgery that evening and saw Dr. A., who said he would call next morning and did not. Her husband being still in pain she went again on Monday evening for the doctor who called at 7.30 P.M. He made no physical examination, advised the patient to continue to take the medicine already prescribed and to remain indoors pending a further visit. The pain did not abate and on the following Thursday the wife went to the surgery and rang two or three times without obtaining a reply. Another doctor was called in, who found the man suffering from pleurisy. A third doctor arranged for his admission to hospital, suffering from rheumatic fever and pleurisy, where he remained for some weeks, dying about two months after his discharge. Dr. A. never saw the patient again, nor did he respond to any letters addressed to him by the committee which makes the following comment:

"In the absence of any communication whatsoever from the practitioner we decided to accept in its entirety the statement made by the complainant, who appeared to us to be a witness of truth. The practitioner has made no attempt to refute any of the statements made by the complainant. There was, of course, no legal obligation on the respondent either to answer letters addressed to him by the Committee or to attend before us, but he could hardly expect his conduct in this respect to produce a favourable impression. This is in itself a serious indication of a lack of any sense of responsibility in the general conduct of his practice, and he has only himself to thank if thereby he has been deprived of the opportunity of presenting his conduct in relation to this case in a less unfavourable light than that in which we have been compelled to view it."

It may be that the doctor had a perfectly good answer in reply to his alleged failure to provide treatment for an insured person, but he will now be asked by the Ministry of Health to explain not only this but his attitude to the committee, and runs the risk of removal from the medical list. It seems a pity.

The Thumb which Went Wrong

The suggestion is sometimes made that the proceedings of medical service subcommittees savour of Star Chamber methods. Reference was made in this column recently to a case in which the committee commented in no unmeasured terms upon the attitude of the employer of an insured person by whom a complaint was raised against a doctor. The discussion in a northern insurance committee on a case of alleged neglect, with the eventual necessity for the terminal phalanx of an insured person's right thumb to be amputated, suggests that the doctor gets a fairer hearing in the mixed committee than he would if a committee of laymen conducted the investigations. A patient consulted his doctor in February, 1935, for a slight injury to his thumb which was found to be septic. The doctor incised and drained the thumb, gave instructions about the treatment and prescribed ointment and bandage. The patient attended at the surgery on the next three days and received appropriate treatment and subsequently further treatment was provided either by the doctor or one of his partners at intervals of not less than seven days. Early in the course of treatment the doctor suggested

the desirability of an X ray of the thumb, but his partner thought it unnecessary. On June 4th the patient asked for an X ray and the report disclosed that the bone was diseased. The patient thereupon attended hospital and received treatment there almost daily for three weeks, his thumb being incised and drained on two occasions. He did not, however, see his insurance doctor. Later the patient was told by the house surgeon at the hospital that amputation would be necessary, but on July 1st he left Lancashire for the South Coast where on July 6th a portion only of his thumb was amputated. The committee while expressing sympathy with the insured person at the loss, suffering, and expense he had sustained were of opinion that the doctor had not failed to exercise reasonable care and skill in the treatment of the patient.

A member of the insurance committee criticised the constitution of the subcommittee and said that having read their report he thought someone outside the district ought to give a verdict thereon. He did not think it was right to have three doctors sitting on this subcommittee. Another member pointed out that cases of this kind might seriously affect a number of people in the town and he contended that it should have been dealt with by the full committee. Accidents were happening every day, but most of them were cured in a day or two. Here was a man who had gone through suffering, had lost his thumb which handicapped him in his employment, and had been put to heavy cost to get correct treatment. If the treatment had been correct he would have been back to work within a week. Nevertheless the report of the subcommittee was adopted with a single dissident.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED
NOV. 9TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2742; diphtheria, 1330; enteric fever, 26; acute pneumonia (primary or influenzal), 781; puerperal fever, 28; puerperal pyrexia, 110; cerebro-spinal fever, 11; acute poliomyelitis, 19; encephalitis lethargica, 6; relapsing fever, 1 (Dorking and Morley R.D.); dysentery, 25; ophthalmia neonatorum, 76. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on November 15th was 3189, which included: Scarlet fever, 1180; diphtheria, 1239; measles, 62; whooping-cough, 221; puerperal fever, 21 mothers (plus 11 babies); encephalitis lethargica, 280; poliomyelitis, 7. At St. Margaret's Hospital there were 14 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox or enteric fever, 28 (1) from measles, 2 (0) from scarlet fever, 8 (1) from whooping-cough, 26 (3) from diphtheria, 46 (12) from diarrhoea and enteritis under two years, and 38 (7) from influenza. The figures in parentheses are those for London itself.

Liverpool reported 9 deaths from measles, Manchester 8, Bootle 4, and Tynemouth 2. Deaths from diphtheria were scattered over 23 great towns, Birmingham reporting 2, no other town more than 1. The mortality from influenza is similarly scattered over 29 great towns, only Liverpool, Middlesbrough, and Swansea reporting 2 deaths, no other great town more than 1.

The number of stillbirths notified during the week was 234 (corresponding to a rate of 38 per 1000 total births), including 39 in London.

CORRESPONDENCE

RESECTION FOR CARCINOMA OF THE
SIGMOID AND SIGMOID RECTUM*To the Editor of THE LANCET*

SIR,—In your issue of Nov. 16th Dr. D. P. MacGuire describes an operation for cancer of the rectum which I feel should not be allowed to pass without criticism, especially at the present time when surgeons in this country are striving to simplify operations of this type and reduce the mortality. The operative procedures used in England for removal of cancerous tumours of the upper end of the rectum and lower end of the pelvic colon are now more or less standardised, and although, no doubt, still capable of considerable improvement are a great advance on similar operation of 20 years ago. The operation as described in Dr. MacGuire's article seems a clumsy and unnecessarily complicated procedure with nothing to recommend it. Most surgeons of the present day, myself included, prefer to do the operation in two stages, as it has been found from experience that the safety of the patient is much increased thereby and the immediate mortality lowered. This is also the opinion of many American surgeons, including those of the Mayo Clinic. The colostomy is established at the first operation and the resection performed at the second operation, after a suitable interval to allow of the colon being decompressed and the patient brought into the best possible condition. Moreover, the time which the operation takes, necessarily rather long, is considerably shortened by planning the operation in two stages.

The method of first freeing the rectum from below and completing the resection from the abdomen was first described by Mr. W. B. Gabriel (*THE LANCET*, 1934, ii., 69) and has advantages both in saving time and making the operation easier. The combined operation, starting in the perineum, only involves one move, from the left lateral to the back position, whereas the procedure described by MacGuire involves at least two moves. In my experience there is no danger in dividing the colon at the first stage of the operation, and although I have done it a considerable number of times I have had no sepsis or peritonitis result from it. There are often adhesions which require separating, but this slight disadvantage is being got over, and in any case is more than outweighed by the greater safety of a two-stage operation, and the much shorter time that the operation takes. I have this last week done a complete second-stage combined operation in a man in 50 minutes, including the time taken in turning the patient and changing gloves.

Blood transfusion is called for only occasionally and I have never known it necessary to use more than one, while parotitis as a complication I have yet to meet with.

An operation that must of necessity be performed upon an elderly patient (since cancer of the rectum is usually met with in patients between the ages of 55 and 65) must, to be successful, be as simple and as quick as is reasonably possible, and an operation which inevitably involves opening the abdomen three times (twice through one incision and once through another), and also opening the pelvis from the perineum, cannot, it seems to me, recommend itself to modern surgeons, and is not one to be copied.

I am, Sir, yours faithfully,

J. P. LOCKHART-MUMMERY.

Harley-street, W., Nov. 15th.

SKIN TESTS FOR WHOOPING-COUGH

To the Editor of THE LANCET

SIR,—In your issue of August 17th last (p. 361) a preliminary report on a skin test for pertussis was published by Drs. Bailey, Waller, and myself. Since then I have been doing further skin tests, and using Sauer's vaccine as an antigen. The results obtained vary with the batch, and it appears to me that the ideal and constant antigen has not yet been achieved. I hope that someone working at this subject will be able to produce a really satisfactory and constant antigen for the intracutaneous skin test.

I am, Sir, yours faithfully,

DONALD PATERSON.

Devonshire-place, W., Nov. 15th.

"KWASHIORKOR"

To the Editor of THE LANCET

SIR,—Under the above title there appears in your last issue (p. 1151) an article by Dr. Cicely Williams with the sub-title "a nutritional disease of children associated with a maize diet." May I firstly enter a protest against the use of a West African native word as the title of an article. How will it be possible for anyone later looking for references to nutritional disorders to recognise one under such a designation? The secondary title is equally open to criticism as it would seem that the association with a maize diet is merely incidental. There is a further objection to the name *kwashiorkor*; it indicates "the disease the deposed baby gets when the next one is born." That such a sequence of events occurs is a common superstition in other parts of Africa as I first pointed out in 1922 (*Harvard African Studies*, vol. iii., p. 289). Among the Wa-yao of Central Africa the disease, whatever it may be, is called *litango lya kututa*—each successive child is said to push (ku-tuta) the previous one into its grave.

In Dr. Williams's previous article (1933) a number of statements were made in regard to the differential diagnosis between this disease and pellagra, which were calculated to give an entirely false impression of pellagra and I felt constrained to draw attention to them the following year (*Arch. Dis. Childhood*, 1934, ix., 115). Dr. Williams has now again repeated these misstatements in regard to pellagra, presumably based upon a failure to realise the course and symptomatology of that disease, and tends to confuse the problem at issue. To deal with the table of "Differences between Kwashiorkor and Pellagra":—

1. The affected skin is "black, rugose, and soft" in K. So it may be in typical P. Elsewhere Dr. Williams states it "tends to peel off, leaving a moist, raw surface." This is often the case in P. and while branny desquamation may take place in P., in other cases large ulcerated areas may result.

2. "Extensor surfaces and points of irritation and pressure affected" in K. This of course is common in P. As I have pointed out elsewhere any form of trauma, in its wide sense, may determine the site of the pellagrous eruption. The distribution of the skin affection in K. is probably what one would expect.

3. "Skin not photosensitive" in K.—photosensitive in P. In P. the skin is not always photosensitive. In the West African children it is not proved whether or not the conditions necessary for the exhibition of photosensitivity were present or not.

4. K. "occurs in children under 5 years"—usually under 2 years. P. "rare in children, almost unknown under 2 years." This is a fallacious statement. Pellagra may

occur at any age—a child of a few months, a centenarian—provided the conditions necessary for its production are present.

5. "Reflexes unchanged" in K.: "peripheral neuritis common" in P. It is obviously quite beside the point to compare infants suffering from the acute disease of short duration with more chronic cases of P. with involvement of the nervous system. One would hardly expect to see changes of the reflexes in Dr. Williams's babies.

6. The same is true of dementia—a symptom seen in old chronic pellagrins. Does Dr. Williams seriously consider the absence of dementia in these babies a point of differential diagnosis!

7. The presence or absence of a milk diet is of little importance per se; the point would be the quality of the milk.

8. The same is true of yeast—why compare the yeast-contaminated maize product with the curative effects obtained by the exhibition of large doses of certain yeasts?

Let this suffice in the way of criticism and turn to the positive side of the picture. A typical skin eruption occurring in areas subject to trauma, associated with stomatitis, sores at the muco-cutaneous junctions and vulva (so common in pellagra as I pointed out many years ago), diarrhoea, and nervous irritability—the picture of pellagra—the picture, of pellagra to be expected in the infant.

I am, Sir, yours faithfully.

London, W., Nov. 17th.

HUGH S. STANNUS.

DELAYED LACTATION

To the Editor of THE LANCET

SIR,—The Truby King school has taught us never to despair of restoring breast-feeding. I should like to ask: How long after the birth of a child is it possible to restore a discontinued supply of breast milk, and after what period of discontinuance?

A Chinese woman, aged 21, was delivered with forceps by a local practitioner under dirty conditions in the village of Yenangyaung on Jan. 24th, 1935. She had a bad perineal tear and developed severe puerperal sepsis for which she was admitted to hospital on Feb. 6th. After a few stormy weeks she was finally discharged from hospital on April 14th, having had no fever for a week but still suffering from a high degree of secondary anaemia. Her condition continued to improve after discharge from hospital and in about two months she was quite well apart from the unrepaired perineal tear. No attempt was made to suckle the baby during this period, and there was no sign of milk in the mother's breast after admission to hospital. When the infant was 12 weeks

old it was admitted to hospital for a severe attack of vomiting and diarrhoea due to faulty feeding—partly with sweetened condensed milk and partly wet-nurse's milk. When it recovered from this it was sent home with explicit instructions as to bottle-feeding.

No news was heard from the family until the end of July, when the child developed influenza, and on inquiry as to feeding, it was announced that a few weeks after discharge from hospital at the end of April, the mother had begun to put the child to the breast, and in two weeks had been able to dispense with bottle-feeding and feed the child entirely from the breast. Needless to say, it was fed in the good old Asiatic fashion—i.e., whenever it cried.

The point of interest in this case is that the mother had produced no milk for three months after confinement and then became able to feed her child entirely from the breast—and this in spite of a trying illness in which her life hung in the balance, and which produced a severe secondary anaemia. Further, there was no attempt at regular intervals of feeding, and the only lactagogue used was a much advertised wine.

It would be interesting to know whether cases of this type are common in the experience of paediatricians.

I am, Sir, yours faithfully,

W. B. CRAWFORD.

B.O.C. Hospital, Nyaungghla, Upper Burma.

A KIND THOUGHT

To the Editor of THE LANCET

SIR,—I shall be obliged if you will allow me a small space in your columns in order that I may express our thanks to a number of German-Jewish doctors who have been compelled to leave their country and to take refuge in this country. In the midst of their difficulties and distress they have collected in small sums over £10 for the Royal Medical Benevolent Fund. They have asked us to accept it as a thank-offering for the kindness and hospitality that has been shown to them and their unfortunate countrymen by England. I think that this kind thought on their part for our poorer brethren merits something more than the official acknowledgment of the contributions; hence this letter.

I am, Sir, yours faithfully,

L. G. GLOVER,

Hon. Treasurer, Royal Medical Benevolent Fund.
11, Chandos-street, London, W.1, Nov. 18th.

OBITUARY

CHARLES HERMANN TATTERSALL, M.R.C.S.,
D.P.H.

Dr. Tattersall, who died at New Milton, Hants, on Nov. 11th, was for many years medical officer of health for Salford. He qualified at Manchester from Owens College in 1886 and became medical officer to the Barton-upon-Irwell Union; then after taking the Durham diploma in sanitary science he was appointed medical officer of health for Eccles, Oldham, and finally, in 1897, Salford. He lectured on public health at Owens College, examined in the Victoria University, and advised the Salford education committee. The work of the Salford health department during his tenure grew enormously and was transferred from the town hall to the building where it now is. Dr. Tattersall saw a large proportion of the pail closets in the city converted to water carriage and most of the back-to-back houses transformed by through ventilation. He started an open-air school in Peel Park and, after its manifest success,

another at Barr-hill, Pendleton. In one aspect of public health work, at least, Dr. Tattersall was well ahead of his time, for, from the commencement of his service in Salford he carefully fostered the work of the Ladies' Public Health Society, a voluntary organisation existing solely for the welfare of mothers and children. Under Dr. Tattersall's administration, from this elementary coöperation was developed, by degrees, a service established on a wider and firmer footing, so that it became a simple matter in 1915 to create a fully fledged maternity and child welfare department, when these activities became generally recognised.

Tattersall was a sound chemist. His inquiry at Oldham into the plumbo-solvent action of the local water was a fine piece of work, but it was in the astonishing outbreak of arsenical poisoning from beer in 1900 that he came to public notice. The acumen of the late Dr. E. S. Reynolds saw something to be investigated in the increasing number of cases of "alcoholic paralysis" admitted to the Manchester

Royal Infirmary, and he actually discovered arsenic in the beer they had been drinking. But it was Tattersall who worked indefatigably to trace the origin of the arsenic and who found the clue in a sample of the sulphuric acid used in making the glucoses and invert sugars supplied to the brewers. His evidence satisfied the Royal Commission on Arsenical Poisoning, held the following year, that the epidemic was due to the use of a particular sugar in the making of beer. Tattersall had noted the great rise in the deaths from alcoholism and peripheral neuritis between June and November, 1900, and the increasing number of patients reported from the poor-law hospital to be suffering from what appeared to be alcoholic neuritis. Numbers of cases of herpes zoster were also being reported. He ascertained that all the sufferers took beer, and was impressed by the fact that many of them had not been excessive drinkers, the amount of beer consumed varying from 1 to 16 pints a day. While the preliminary examination of the beer by Delépine was in hand they heard of Dr. Reynolds's discovery and were able at once to confirm it. In Salford alone there were 107 deaths and 996 reported cases of neuritis; Tattersall had no doubt many more cases had occurred and had been concealed to avoid the stigma of excessive drinking. No cases of illness resulted from the consumption of confectionery or jams or syrups containing glucose, the sufficient explanation being that the invert sugar and glucose were supplied by the works in question only to brewers. It was Tattersall's experience of this outbreak which aroused his keen interest in the possible adulteration of food and drugs, which resulted later in the appointment of a whole-time public analyst for Salford.

Throughout his official life Dr. Tattersall met every new task with energy and the ability of a born administrator; perhaps the best tribute to his work is the fact that so little criticism could be levelled against anything he undertook. He was an excellent pianist and organist, and after his retirement his home was the centre of a musical circle.

GEORGE WILSON BURN, M.R.C.S.Eng., L.S.A.

Dr. Wilson Burn, who died at Cromer on Nov. 11th in his eighty-ninth year, has left an account of his

life in a volume of "Stories and Recollections" circulated among his friends a few months ago. He was, he tells us, born a cripple, but his uncle, Adolphus Burn, who practised in Bow and afterwards in Australia, divided his tendo Achillis (tenotomy was then a new operation) with the result that he was able to walk if need be 30 miles in the day. The scarpa shoe which he wore for six months is in the museum of the Royal College of Surgeons under his name. Young George went to school at Newport Pagnell and then at Great Linford, where his paternal grandfather was schoolmaster and where he learnt Latin grammar by heart without the least idea of what it meant. Life in rural Buckinghamshire then had its attractions. There was the circus, there was Wombwell's menagerie, and there was the Long Fair at which Prof. Pepper demonstrated the ancient ordeal by fire. His other grandfather had practised as a doctor in Limehouse all his life—it was owing to his effort that the water in that area was turned on for half an hour every day instead of once a week—and George had always wanted to be a doctor, although his father was anxious for him to go into a bank. But he got his way and after passing the London preliminary scientific from home he entered Bart.'s with a scholarship in October, 1868, where he found two subjects very prominent in the public eye—viz., antiseptics and bone-setting, and came under the spell of James Paget and Lauder Brunton. He clerked for Samuel Gee and dressed for G. W. Callender. After qualifying in 1873 he set up in practice in Brixton, going his rounds in a hansom cab. His wife was a district visitor in the borough and he remained in general practice until 1901 when he retired to St. Albans and later to Cromer. Always interested in botany, most of his time was devoted to gardening, the remainder to popularising Esperanto—a task which took him to many international conferences. His life, he tells us, taught him that at some time or other our words and deeds have been influenced by the words and deeds of someone else who may have been long dead. Hence it behoves us so to speak and to act that any such unconscious influence may be good and beneficial. It was on this principle that Dr. Burn himself acted during his nearly 90 years.

MEDICAL NEWS

University of Cambridge

The following have been appointed examiners:—

Second Examination for M.B., 1936.—Anatomy: Prof. H. A. Harris, Prof. Thomas Walmsley, and (if required) Dr. W. L. H. Duckworth and Dr. Archibald Durward. Physiology: Mr. F. J. W. Roughton, Ph.D., Dr. E. G. T. Liddell, and (if required) Dr. O. A. Trowell, Prof. B. A. McSwiney. Pharmacology (including oral): Prof. E. B. Verney, Dr. Clifford Hoyle, and (if required) Dr. G. W. Theobald, Dr. G. N. Myers, Dr. K. J. Franklin, and Prof. A. St. G. Huggett. General Pathology: Dr. E. T. C. Spooner, Prof. M. J. Stewart, and (if required) Dr. L. E. H. Whitby, Dr. Raymond Williamson, Dr. H. A. Lucas, and Dr. G. P. McCullagh.

Qualifying Examinations, 1936.—Anatomy: Dr. Duckworth, Prof. Walmsley. Physiology: Dr. F. R. Winton and Prof. J. B. Leathes, F.R.S.

Third Examination for M.B., 1936.—Surgery: Mr. Geoffrey Keynes, Mr. A. Tudor Edwards, Mr. R. Davies-Colley, Mr. J. B. Hunter, Mr. W. H. Osilvie, and (if required) Mr. W. S. Perrin, Mr. Julian Taylor, Mr. Sampson Handley, Mr. Geoffrey Jefferson, Mr. Lancelot Bromley, Mr. W. H. Bowen, Mr. R. M. Vick, and Mr. Ivor Back. Midwifery: Dr. Wilfred Shaw, Mr. Stanley Dodd, Dr. Malcolm Donaldson, Mr. William Gilharr, and (if required) Mr. L. Carnac Rivett, Dr. J. M. Wyratt, Dr. J. R. C. Canner, Mr. V. B. Green-Armytage, Mr. Aleck Bourne, and Mr. Frank Cook. Medicine: Dr. G. S. Haynes, Dr. A. E. Clark-Kennedy, Dr. George Graham, Prof. A. E. Naish, Dr. Arnold Stott, and (if required) Dr. Geoffrey Evans, Dr. Crichton Bramwell, Dr. J. W. McNee, and Dr. C. E. Lakin. Pharmacology, Therapeutics, and Toxicology: Prof. Verney, Dr. T. H. Oliver, and (if required) Prof. W. J. Dilling, Prof. E. D. Wilkinson, Prof. J. H. Burn, and Dr. Leslie Cole.

On Nov. 15th the following degrees were conferred:—

M.D.—D. B. Wilson.
M.B., B.Chir.—D. P. King.
M.B.—R. W. Ironside and C. W. Thomas.
B.Chir.—N. C. London.

* By proxy.

The Royal Society

The list of names to be recommended for election to the council of this society on Nov. 30th contains the following: president, Sir William Bragg, O.M.; treasurer, Sir Henry Lyons; secretaries, Sir Frank Smith and Prof. A. V. Hill; foreign secretary, Prof. A. C. Seward. The council is to include Prof. E. D. Adrian, F.R.C.P., Sir Patrick Laidlaw, F.R.C.P., Prof. Robert Robison, and Mr. Wilfred Trotter, F.R.C.S. The Davy medal has been awarded to Prof. Arthur Harden for his work on biochemistry and especially for his fundamental discoveries in the chemistry of alcoholic fermentation.

Harveian Society of London

The Buckston Browne prize for 1935 has been awarded to Dr. W. R. Fearon, of Trinity College, Dublin, for his essay on nutritional factors in disease.

Birmingham General Hospital

Sir Herbert Austin has given £2000 to this hospital for the provision of a third X ray apparatus.

Royal College of Surgeons of England

A meeting of the council was held on Nov. 14th, with Sir Cuthbert Wallace, the president, in the chair. Mr. Victor Bonney was re-elected representative on the Central Council for District Nursing for a period of three years. The council decided to guarantee a sum of £1625 from the Proffit trust towards the expenditure of the governing body of Radium Beam Therapy Research for the year beginning next March.

Diplomas of membership were granted to the candidates named on p. 1094 of our issue of Nov. 9th as receiving the L.R.C.P. (except T. D. Chablani, Bishnupada Datta, E. W. Knowles, and Phyllis J. M. Sykes). A licence in dental surgery was granted to Tord Borke, and diplomas in public health and child health were granted jointly with the Royal College of Physicians to the candidates named in *THE LANCET*, Nov. 9th, p. 1094. Diplomas in anaesthetics were granted jointly with the Royal College of Physicians to L. M. Routh and S. T. Rowling.

The following hospitals were approved, with the posts specified, for recognition for the six months' surgical practice required of candidates for the final fellowship examination:

Cumberland Infirmary, Carlisle (senior house surgeon);
St. George's Hospital, London (1st, 2nd, and 3rd assistant
and 1st, 2nd, 3rd, and 4th house surgeon);
St. George's Hospital, Greenwich (resident surgical officer
and 1st and 2nd house surgeon until July 31st, 1937).

British College of Obstetricians and Gynaecologists

At a meeting of the council held on Nov. 16th with Dr. J. S. Fairbairn, the president, in the chair, the following were elected to the membership: P. A. McCleod, C. M. Plumptre, T. R. Plunkett, and H. Rowntree.

A. A. Gemmell (Liverpool) was formally admitted to the fellowship and the following to the membership:—

Bernard Berger, G. A. Davies, F. J. Hayden, A. M. Hill, J. L. Jona, Alice M. Kenny, Hilda N. Lloyd, H. I. McClure, L. B. Patrick, T. G. Robinson, G. R. Sparrow, G. R. Stoneham, Jane B. Stubbs, W. E. C. Thomas, C. K. Vartan, and Ramsay Warden.

Ahmed Bey Shafik (Cairo) was admitted to the foundation fellowship in absentia, and the following were admitted to the membership in absentia:—

Narendranath Basu, J. R. S. Beard, James Black, J. H. Boyd, W. G. Cosbie, H. D. De Sa, K. C. Donovan, M. B. Fraser, Israel Goldberg, A. F. Hobson, J. S. Howell, T. D. Hughes, J. Jhirad, Hilda M. Lazarus, D. M. Low, Ronald McRobert, G. B. Lowe, R. E. Magarey, A. A. Moon, E. L. Newman, Hemendranarayan Ray, Ida B. Saunders, T. H. Small, R. S. Townsend, H. B. Van Wyck, and James Waterman.

At the end of the meeting, Sir Ewen Maclean assumed the office of president. A vote of appreciation of the services of Dr. Fairbairn during the past three years as president was adopted by the council.

ANNUAL DINNER

The presidents of both sister colleges supported the president of the British College of Obstetricians and Gynaecologists at the fifth dinner of the college, held at Claridge's on Nov. 15th. It was Dr. Fairbairn's leaving-taking of the presidential chair; on Saturday he was to surrender it to Sir Ewen Maclean. Lord Dawson, in giving the toast of "The College," spoke of its founder and first president, the restless lovable torch-bearer who never forgot—or allowed anybody else to forget—that he was bearing a torch; "and now," he said, "after six years you have a membership of which you may be proud, and you have brought the old country and the new together in a fresh bond of service." The college had come to the front at a time when the public was beginning to look for help to the medical profession; for with the rationing of babies they were coming to depend on quality rather than quantity, more than when there was a bigger turn-over. Speaking of the dangers of maternity, Lord Dawson said he wanted the public to realise that quite as much depends on the house, and on the state of the mother before birth, as on her condition during and after it. In the co-operation growing up between medicine and local health authorities, he begged the college to keep the lead in its own hands in guiding the maternity service. In their search for a means of relieving pain which could safely be put in the hands of the midwives themselves he asked them to refuse to be hustled. Finally he congratulated the college on its good work. It had initiated

post-graduate study, it had gained a standing in the world, it had shown leadership in public health policy, and it had fostered fellowship the world over. The colleges would now move forward in a spirit of co-operation.

Dr. Fairbairn in reply rejoiced that both the senior colleges were there. In these early years the principles on which the obstetric college should base its work had gradually crystallised out. The problem of analgesia in childbirth was, he thought, proving more difficult to solve than had been thought; the committee's report on it was to be presented to the council on the morrow. The estimate of cost had been found grossly inadequate, particularly in the cost of gas inhalation, where he hinted at leakage. Dr. Fairbairn had brought back with him from Australia the greetings of Prof. Marshall Allan and his colleagues at Melbourne. There were, he said, two outstanding events during his overseas visit: the admission of 17 new Australian members, and a luncheon given by the foundation fellows in Australia—a real family party. Not having time to visit New Zealand he had asked Mr. Bright Banister to delegate there for him, and he had found the same enthusiasm for the college. At home the internal work was going on. They had revised the articles and the by-laws. The rising curve of membership showed as yet no sign of falling off.

Sir Ewen Maclean gracefully proposed the guests and Sir Cuthbert Wallace replied, speaking of the debt he owed to Dr. C. J. Cullingworth who, he said, took the gynaecological knife out of the surgeon's hands. The dinner concluded at an early hour when the floor was cleared for dancing, there being many young people present.

Royal Faculty of Physicians and Surgeons of Glasgow

At the annual meeting of the faculty on Nov. 4th the following were elected office-bearers for the ensuing year:—president: Prof. Archibald Young; visitor: Dr. John Henderson; hon. treasurer: Mr. James H. MacDonald; hon. librarian: Dr. W. R. Snodgrass; other councillors: Mr. G. H. Edington (representative to the General Medical Council), Dr. Carstairs Douglas, Dr. A. Brown Kelly, Mr. John Patrick, Mr. Roy F. Young, Mr. R. Barclay Ness, Mr. J. Forbes Webster, Mr. John Gracie, Dr. J. Souttar McKendrick, Mr. John Rowan, and Mr. A. G. Faulds.

The honorary higher dental diploma was conferred on Mr. J. Forbes Webster, dean of the Incorporated Glasgow Dental Hospital.

Royal Sanitary Institute

The next health exhibition of this institute will be held at Southport in July, 1936, in connexion with its annual health congress. Further information may be had from the secretary at 90, Buckingham Palace-road, London, S.W.1.

Medical Society of Individual Psychology

At a meeting of this society on Nov. 14th Dr. J. A. Hadfield gave an address entitled a Contribution to Psychopathology. He suggested that a working basis of psychopathology was possible which was independent of the hypothesis of sexual libido as a primary urge; upon the elaboration or perversion of which subsequent equilibrium would depend. This basis was provided by an investigation into the infant and child life in relation to maternal protection and love. He suggested that such investigation would provide the necessary help to the understanding of many of the neuroses and psychoneuroses. Anxiety and other emotional states and the many psychoneuroses such as hysteria and delinquency appeared often to be related to the deprivation of protective love rather than to sexual repression on the one hand, or organ inferiority on the other. The specific symptom was, he suggested, conditioned by the state of mind of the child at the time of deprivation; and such a state of mind was often determined by the age and stage of development of the child. Thus depression, sex perversions, and anxiety states usually originated in the first year of life, obsessional states in the second year (or aggressive phase), conversion hysteria about the age of three, and delinquencies in the phase of independence at four.

Central Housing Advisory Committee

Under the Housing Act, 1935 the Minister of Health has appointed a committee to advise him on questions of housing. He will himself be chairman, and the members will be Lord Balfour of Burleigh, Sir Harold Bellman, Mr. G. M. Burt, the Earl of Crawford and Balcarres, Mrs. M. M. Dollar, J.P., the Earl of Dudley, Sir Francis Fremantle, M.D., M.P., Miss Megan Lloyd George, M.P., Mr. George Hicks, Mr. A. L. Hobhouse, J.P., Mr. L. H. Keay, F.R.I.B.A., the Countess of Limerick, Mr. O. Ling, J.P., Sir Miles Mitchell, J.P., Mr. C. J. Newman, Mr. E. G. Rowlinson, J.P., Sir Isidore Salmon, M.P., the Rev. E. St. G. Schomberg, Mr. L. Silkin, L.C.C., Mr. J. A. Simpson, Sir Raymond Unwin, F.R.I.B.A., Mr. J. A. F. Watson, Sir Seymour Williams, Dr. J. Greenwood Wilson, and the Bishop of Winchester. The secretary is Mr. H. H. George, to whom communications may be addressed at the Ministry of Health.

Battersea General Hospital

On Nov. 19th, in the Chancery Division, an alteration of the objects of this hospital was made by eliminating from them clauses relating to vivisection, as a result of which serums and antitoxins can now be used. For the last three years the hospital has had a large deficiency, but it will now be eligible for assistance from the King Edward Hospital Fund.

THE QUETTA EARTHQUAKE

LIST OF AWARDS

AMONG honours conferred for services rendered in connexion with the recent earthquake in Baluchistan are the following:—

C.I.E.

Lieut.-Colonel Samuel George Steele Haughton, M.D. Dub., O.B.E., I.M.S.
Officiating A.D.M.S., Zhob (Independent) Brigade Area, Western Command.

O.B.E. (Civil)

Lieut.-Colonel Vaman Raghunath Mirajkar, F.R.C.S. Eng., I.M.S.
Professor of Operative Surgery, King Edward Medical College, Lahore, Punjab.

O.B.E. (Military)

Lieut.-Colonel Jacob William Vanreenen, M.B., F.R.C.S. Edin., I.M.S.
Officer commanding No. 4 Company, Indian Hospital Corps, Quetta.

Kaisar-i-Hind Gold Medal

Mrs. Constance Ellice May Berridge, M.B. Glasg.
Lady Divisional Superintendent, Moghalpura Nursing Division, North-Western Railway Corps.

Major James Ernest Gray, M.B. Belf., I.M.S.
Civil Surgeon, Karachi, Bombay.

Kaisar-i-Hind Silver Medal

Miss Ruth Hooton, M.B. Leeds.
Of the Church of England Zenana Missionary Society.

Miss Nora Proctor Sims, M.R.C.S.
Of the Women's Medical Service, India.

Henry Bowlby Tristram Holland, M.B. Edin.
Of the Church Missionary Society.

Arthur Durnford Iff, M.R.C.S.
Of the Church Missionary Society.

Captain Bertrand Temple-Raston, L.M.S.S.A., I.M.S.
Civil Surgeon, Dera Ghazi Khan, Punjab.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Nov. 25th.

Otolaryngology. 8 P.M. Mr. J. Draper Cambrook: Snake Venom. Mr. F. N. Doubleday: Two Unusual Cases of Impacted Lower Third Molars. Paper: Dr. T. H. Roper-Hall: The Barbiturates: their Chemistry, Action, and Toxicology.

Tropical Diseases and Parasitology. 8.30 P.M. Dr. Magarinos Torres: Further Studies on the Pathology of Alastrim and their Significance in the Variola-alastrim Problem. (Lloyd Roberts lecture).

TUESDAY.

Medicine. 5 P.M. Sir Edmund Spriggs: The Causes and Treatment of Obesity. Followed by Dr. H. Gardiner-Hill and Dr. Donald Hunter.

WEDNESDAY.

Comparative Medicine. 5 P.M. (Lister Institute, Chelsea Bridge-road, S.W.).—A. S. McFarlane: 1. Spinning-top Centrifuge and 2. Mechanism. C. L. Oakley: 2. Tumours of the Kidney in F

Edwards: Transmission of Human Acute Coryza to Hedgehogs. H. Burrows: Pyelitis of Pregnancy considered in the Light of Conditions Occurring in Mice after the Prolonged Administration of Oestrone. D. W. Henderson: Passive Immunisation against Experimental Vibrio Septique Infection.

THURSDAY.

Urology. 8.30 P.M. Mr. E. W. Riches: 1. Urethrogram of Prostatic Diverticulum. Mr. James Carver: 2. Calculi in a Vesical Diverticulum in a Woman. 3. New Growth of Kidney with Ulceration of Bowel. 4. Congenital Maldevelopment of Kidney. 5. Large Pelvic Cyst producing Acute Retention of Urine in a man of 65. Mr. Malcolm Baillie: 6. Sections of Epididymomata. Mr. A. E. Roche: 7. Hemato-nephrosis and Carcinoma of the Renal Pelvis. Mr. H. P. Winsbury-White: 8-10. Urethral Calculi. Mr. T. E. Hammond: 11. Adenoma of the Kidney. Mr. Hamilton Bailey: 12. Total Cystectomy by Hinman's Method. 13-14. Plastic Operation for Pelvic Hydronephrosis. Mr. R. H. O. B. Robinson: 15. Radiograms Illustrating Double Ureter and Renal Plexus of Veins.

FRIDAY.

Obstetrics and Gynaecology. 8 P.M. Dr. D. Coutts: Foetus Removed from Mother's Thigh after Rupture of Uterus. Dr. Arthur M. Hill: Post-abortion and Puerperal Gas-gangrene, report of thirty cases. Dame Louise McIlroy: Atresia of the Vagina: Operation followed by Pregnancy and Caesarean Section. Dr. Ida Hirschmann: Derangement of Cyanide Metabolism—the Cause of Pregnancy Toxemia.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
MONDAY, Nov. 25th.—8.30 P.M.—Dr. R. D. Lawrence and Dr. George Graham: The Use and Abuse of Insulin.

MEDICO-LEGAL SOCIETY.

THURSDAY, Nov. 28th.—8.30 P.M. (Manson House, 26, Portland-place, W.). Dr. F. J. McCann: Some Medico-legal Problems in connection with Pregnancy and Parturition.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.

WEDNESDAY, Nov. 27th.—4.15 P.M., Clinical Cases. 5 P.M., Dr. L. Forman: Rosaceous Tuberculide.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Thorn-haugh-street, W.C.

Fever Group.

FRIDAY, Nov. 29th.—4 P.M., Dr. E. H. R. Harries: Fever Hospital Practice in Retrospect and Prospect (presidential address).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Nov. 25th, to SATURDAY, Nov. 30th.—INFANTS HOSPITAL, Vincent-square, S.W. Mon., Wednes., and Fri., 8 P.M., course in anatomy and physiology for the F.R.C.S. (primary).—LONDON LOCK HOSPITAL, 91, Dean-street, W. Afternoon course in venereal disease.—INFANTS HOSPITAL, Vincent-square, S.W., afternoon course in diseases of infants.—ST. MARK'S HOSPITAL, City-road, E.C. All-day course in proctology.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars, S.E. Afternoon course in dermatology.—BROMPTON HOSPITAL, S.W. Sat. and Sun., course in chest diseases.—Courses are open only to members of the fellowship.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Nov. 29th.—9.45 A.M., Mr. Norbury: Treatment of Carcinoma of the Rectum. 11.30 A.M., Dr. Rorke: Some Cases of Venereal Disease, and their Treatment. 2 P.M., Miss Barry: Treatment of Varicose Veins and

Hæmorrhoids by Injection. 3 P.M., Dr. Nicol: Psychological Medicine.

SATURDAY.—9.45 A.M., Dr. Davies: Anæmia. 11.30 A.M., Dr. Ulysses Williams: X Ray. 2 P.M., Dr. Ledingham: New Drugs. 3 P.M., Prof. Webb: Immunisation with Toxoids.

SUNDAY, Dec. 1st.—10 A.M., Prof. Amy Fleming and staff of Unit: Obstetric Lecture-demonstrations, including anaesthetics in midwifery practice.

The course is open only to former students of the hospital.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Nov. 25th.—3.30 P.M., Dr. Greenfield: The Chemistry of Cerebro-spinal Fluid.

TUESDAY.—3.30 P.M., Dr. Critchley: Epilepsy and Allied Conditions.

WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. Walshe: The Motor System (II.).

FRIDAY.—3.30 P.M., Dr. Gordon Holmes: Disorders of Vision (II.).

Out-patient clinic daily at 2 P.M.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Nov. 28th.—2 P.M., Mr. G. G. Penman: Abnormalities and Diseases of the Eye in the Young Infant. 3 P.M., Dr. D. N. Nabarro: Congenital Syphilis (I.).

Out-patient clinics daily at 10 A.M. and ward visits at 2 P.M. (except on Wednesdays).

CHARING CROSS HOSPITAL, W.C.

THURSDAY, Nov. 28th.—5 P.M., Prof. Edward Mellanby, F.R.S.: The Rapid Advance of Science since the Time of Huxley. (Huxley lecture.)

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.

THURSDAY, Nov. 28th.—3 P.M., Dr. Wilfred Harris: Pains about the Head and Neck.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Nov. 27th.—4.30 P.M., Dr. H. N. Webber: Anaesthetics in Urology.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Nov. 25th.—10 A.M., skin clinic, medical wards. 11 A.M., surgical wards. 2 P.M., surgical and gynaecological wards, gynaecological and eye clinics. 4.15 P.M., Dr. Maurice Shaw: The Truth about Peptic Ulcer.

TUESDAY.—10 A.M., medical wards. 11 A.M., surgical wards. 2 P.M., throat clinic. 4.15 P.M., Dr. Owen: Hemorrhage and Jaundice in Infants.

WEDNESDAY.—10 A.M., children's wards and clinic, medical wards. 2 P.M., eye clinic. 4.15 P.M., Mr. Woodd Walker: Diseases of the Hip-joint.

THURSDAY.—10 A.M., neurological and gynaecological clinics. Noon, fracture clinic. 2 P.M., eye and genitourinary clinics. 4 P.M., venereal diseases.

FRIDAY.—10 A.M., skin clinic. Noon, lecture on treatment. 2 P.M., throat clinic.

SATURDAY.—10 A.M., children's and surgical clinics, medical wards.

The lectures at 4.15 P.M. are open to all medical practitioners without fee.

Operations, medical and surgical clinics daily at 2 P.M.

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.

THURSDAY, Nov. 28th.—9 P.M., Mr. V. E. Negus: Tuberculosis of the Ear, Nose and Throat.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

WEDNESDAY, Nov. 27th.—4 P.M. (St. James' Hospital, Ouseley-road, S.W.), Dr. Russell J. Reynolds: Cine-radiography.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.

WEDNESDAY, Nov. 27th.—4 P.M., Dr. P. Finigan: Aims and Methods of Modern Dentistry.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.

TUESDAY, Nov. 26th.—5 P.M., Dr. R. T. Brain: Virus Diseases of the Skin.

THURSDAY.—5 P.M., Dr. Knowsley Sibley: Electro-therapeutics.

ST. JOHN CLINIC, Ranelagh-road, S.W.

FRIDAY, Nov. 29th.—4.30 P.M., Dr. C. A. Robinson: The Use of Diathermy in Some Menopausal Syndromes.

ROYAL INSTITUTION, 21, ...

TUESDAY, Nov. 26th.—5.15 P.M., Dr. Mellanby, F.R.S.: Modern Vic lectures.) of four

UNIVERSITY OF SHEFFIELD.

FRIDAY, Nov. 29th.—3 P.M. (Royal Hospital), Dr. E. Fretson Skinner. 3 P.M. (Royal Infirmary), Dr. Robert Platt: Medical Cases. 3 P.M. (Jessop Hospital), Prof. John Chisholm: Gynaecological Cases.

SUNDAY, Dec. 1st.—10.30 A.M. (Royal Hospital), Dr. E. Fretson Skinner: Medical Cases. 10.30 A.M. (Royal Infirmary), Dr. Robert Platt: Medical Cases. Mr. Alan Fawcett: Surgical Cases. 10.30 A.M. (Jessop Hospital), Mr. Eric Stacey: Gynaecological Cases.

GENERAL INFIRMARY, Leeds.

TUESDAY, Nov. 26th.—3.30 P.M., Dr. Bibby: Some Aspects of Congenital Syphilis.

PUBLIC DISPENSARY, Leeds.

WEDNESDAY, Nov. 27th.—4 P.M., Mr. L. X. Pyrah: Differential Diagnosis of the Acute Abdomen.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Nov. 28th.—4.15 P.M., Dr. A. Renshaw: Asphyxia.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE EAR, NOSE, THROAT AND CHEST, Harman-street, Manchester.

WEDNESDAY, Nov. 27th.—4.30 P.M., Mr. V. F. Lambert: Dysphagia.

ROYAL INFIRMARY, Manchester.

TUESDAY, Nov. 26th.—4.15 P.M., Mr. W. R. Douglas: Carcinoma of the Pelvic Colon.

FRIDAY.—4.15 P.M., Mr. Wilson Hey: Demonstration of General Cases.

ST. MARY'S HOSPITALS, Manchester.

THURSDAY, Nov. 28th.—4.15 P.M. (Whitworth-street West Hospital), Dr. Gerrard: Some New Methods in the Diagnosis and Treatment of Obstetric Cases.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

WEDNESDAY, Nov. 27th.—4.15 P.M. (Royal Maternity and Women's Hospital), Prof. S. J. Cameron: Contracted Pelvis.

Appointments

ALLEN, E. H., M.R.C.S. Eng., has been appointed Physio-therapist to the Willesden General Hospital.

CRAWFORD, J. H., M.R.C.S. Eng., Hon. Assistant Anaesthetist to the Hove Gen

McKENNY, C. W., M radiologist to St. John's Hospital

MORLAND, ANDREW, M.D., M.R.C.P. Lond., Tuberculosis Officer at University College Hospital.

PRICE, R. KEMMALL, M.D. Lond., Hon. Physician to the Hove General Hospital.

ROSENKRANZ, L.R.C.P.E tant Radiologist to t

SMITH, S. LEVY, M.D.C to the Willesden Ge

King's College Hospital.—The following appointments are announced:—

EVANS, P. R., M.B. Manch., M.R.C.P. Lond., Registrar to the Children's Department and Medical Officer in charge of the Rheumatism Clinic;

JOHNSTON, C. M., M.B., Registrar to the Ear, Nose, and Throat Department;

PLAYFAIR, P. H. L., M.B. Camb., F.R.C.S. Eng., Obstetric Registrar and Tutor; and

SMITH, E. J., M.B. Lond., F.R.C.S. Eng., Surgical Registrar.

London County Council Hospital Staff.—The following appointments and promotion are announced. A.M.O. (I.) and (II.)=Assistant Medical Officer, Grades I. and II.:

ROBERTSON, J. S., M.D. Aberd., D.P.H., Senior A.M.O. (II.), Pinewood Sanatorium;

MILLER, O. P., M.B. Lond., A.M.O. (I.), Queen Mary's, Sidcup;

IRVINE, D. F., M.B. Glasg., House Physician, Hackney;

O'Riordan, J. D., M.D. Irel., A.M.O. (I.), Queen Mary's Hospital for Children;

WILEY, V., M.D. Irel., D.P.H., Senior Medical Officer;

BOOME, E. J., M.B. Birm., M.R.C.P. Lond., D.P.H., Principal Assistant Medical Officer; and

MITMAN, M., M.D., M.R.C.P. Lond., D.P.H., D.M.R.E., Divisional Medical Officer.

Births, Marriages, and Deaths

BIRTHS

BESLEY.—On Nov. 14th, at Great Shelford, Cambs, the wife of Surgeon Lieut.-Com. F. W. Besley, R.N., of a son.

BLAIN.—On Nov. 8th, at Edinburgh, the wife of Dr. J. A. Blain, Ardersier, Inverness-shire, of a son.

DEATHS

BROWN.—On Nov. 18th, in London, John Macdonald Brown, M.D. Edin., F.R.C.S. Eng., J.P., formerly of 64, Upper Berkeley-street and Leamington Spa.

BURN.—On Nov. 11th, at Roughton, Cromer, George Wilson Burn, M.R.C.S. Eng., L.S.A., in his 89th year.

BUTT.—On Nov. 12th, at a Bournemouth nursing-home, Colonel Edward Ormiston Butt, R.A.M.C., eldest son of the late John Gillis Butt.

GRANT.—On Nov. 18th, at Bedford Court Mansions, W.C.1, A. A. Cumming Grant, M.B. Glasg., in his 84th year, Chief of the Gaelic Society of London.

MALLESON.—On Nov. 12th, Herbert Cecil Malleson, M.R.C.S. Eng., L.D.S., of Thurlow-road, N.W., aged 51.

McKENZIE.—On 19th Nov., 1935, at 22, Hampstead-lane, N.6 (and of 9, Weymouth-street, W.), Dan, the dearly loved husband of Dora Christine McKenzie, aged 66. Cremation at Golders Green on Friday, Nov. 22nd, at 12.30. No flowers by request.

ROBERTSON.—On Nov. 12th, accidentally killed, Katherine Octavia Robertson, M.D. Glasg., of Limavady, aged 44 years.

TATTERSALL.—On Nov. 11th, at New Milton, Hants, Charles Hermann Tattersall, M.R.C.S. Eng., D.P.H., L.S.Sc. Durh., many years Medical Officer of Health for Salford.

WOOD-MARTIN.—On Nov. 10th, suddenly, at Cleveragh, Sligo, Annette Kathleen Wood-Martin, M.B. Dub.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE AMERICAN MATERNITY
HOSPITAL *BY K. VERNON BAILEY, M.C., M.D., M.R.C.P.,
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In a recent visit to Canada and the United States I went over some of the principal hospitals of Montreal, Chicago, and New York, and was received with a courtesy and kindness I shall always remember. Of the six large obstetrical units in these three centres five are less than five years old, and my object in this paper is to give some account of arrangements nowadays made in American hospitals which have been planned, built, and staffed apparently regardless of expense. They represent something new in medical achievement.

Of the six I visited the Chicago Lying-in Hospital is the only one wholly devoted to obstetrics and gynaecology, and it is interesting to find that while it maintains a regular staff it is open to outside practitioners, more than 150 of whom deliver patients there. At all the hospitals most of the patients contribute at least a large proportion of the cost of their upkeep, and there is always spacious accommodation for private cases—usually on a separate floor rather than in a separate block. Roughly speaking, women in the "semi-public" wards, usually 4-bedded, are charged 30s. per week; "semi-private" patients in 2-bedded rooms £3 per week; and private patients £6 upwards.

As one would expect, an atmosphere of general cleanliness is immediately evident from the spacious entrance hall onwards. Quiet is maintained by the use of electrical staff signals from the reception office to the ward corridors, rubber composition flooring, and the installation of sound-proof doors and ceilings to all labour rooms and theatres. The main office in the entrance hall is adequately staffed by clerks, stenographers, and telephonists, as is also the records department. The strictly obstetrical staff has ample assistance in all the ancillary departments.

The Antenatal Clinic

The conduct of antenatal clinics is well illustrated at the Chicago Lying-in Hospital. Here the patients collect in the main out-patient hall from which five separate doors communicate with a long passage. Five senior nurses—one at each door—each call the names of two patients, who proceed through a door into the intervening passage where they are checked by the nurses. They then walk straight into dressing cubicles—which abut in pairs upon the opposite side of the passage—and lock the doors upon themselves. They disrobe, put on a special gown and emerge from the opposite door of the cubicle into the examination room which thus deals with two patients. Here the house surgeon or intern carries out the routine antenatal examination assisted by another intern or student who completes the notes of the case. The patient then returns by the same route to the main hall. By this routine there is a minimum of movement on the part of all concerned. There is privacy for the patient and adequate space and light for the examining doctor and his assistants and students. Moreover, a large number of patients can be examined in this way without loss of time.

At the Royal Victoria Hospital, Montreal, the patient is given a printed card which she takes to a series of examiners (students or nurses) placed at different parts of the clinic. At each of these details

are acquired and entered on the card, so that when she arrives on the examination table the history, present weight, blood pressure, urine test, cardiac condition, and so forth are known.

A clinical laboratory is attached to the antenatal clinic as are also rest rooms for the patients who need them.

Admission and Preparation

The admission and preparation rooms, situated near the ambulance entrance, are, I consider, one of the most important parts of the obstetrical unit, in so far as they deliver the newly admitted patient to the wards in a clean and prepared state and militate against contamination of the hospital by dirty clothing or unsuspected infections. They have plain tiled walls and stone floors, and their chief furniture is a large fixed porcelain "preparation bed" with shallow raised edges and drainage grooves. On this the patient is washed and prepared, an enema apparatus being arranged in conjunction with the bed. The room also contains lavatory accommodation, shower and fixed douche. An adjoining examination room has appliances for testing the urine and blood pressure, as well as clinical facilities for obstetrical and general examination. All patients pass through these rooms and none are admitted to the wards until their condition has been thoroughly investigated.

Wards and Delivery Theatres

The wards themselves tend more and more to small size. They seldom contain more than six or eight beds and usually only three or four, the advantage being if infection develops its spread can be more readily stopped. A favourite design includes lavatory and bathrooms situated between two of these small wards with entrance from each. Furnishing varies, but there are many innovations. For instance, the St. Mary's Hospital at Montreal is very proud of full-length lockers or small ward-ropes let into the walls in groups of two or three, the metal doors being flush with the wall when closed. Each patient has a locker, and clothes and other belongings take up no floor space in the ward.

The solarium is a regular institution. It is placed as a rule at the more pleasant end of each ward, according to view or sun, and consists of a spacious glass-protected area furnished as a rest room. There is no doubt that the patient's comfort during the puerperium and the question of the beneficial effect of sunlight and variety is studied to the full.

The lying-in wards are all on the same floor, the labour wards and theatres being on a separate floor. In this way quiet is ensured to the patients during puerperium or pending their own labour. Corridor floors are of composition rubber and interrupted every 15 yards by swing doors which prevent the conduction of noise.

The labour floor comprises a series of first-stage single rooms and delivery theatres. The patient in early labour is removed from the ward or admitted straight to one of the first-stage rooms. This is simply furnished as a single room and is provided with a sound-proof door and ceiling. Delivery is carried out in the delivery theatres—of which the Chicago Lying-in Hospital has five. These are built and furnished as modern operating-theatres with the exception that a special delivery table is installed. This is simply a modification of the standard operating-table in which quick adaptation from the flat to the lithotomy position is acquired by unhooking and removing the foot end. Sound-proofing is carried out in all delivery theatres, and students' galleries are chiefly situated above the theatre floor and protected by an inclined glass screen. No one but the theatre staff, therefore, occupies the actual floor.

Theatre fittings include Crane's evacuator (used in Cesarean section), electric infant resuscitator, etc.

* Abridged from a paper read before the North of England Obstetrical and Gynaecological Society on Oct. 25th.

electric incubator, electric clock which signals every $\frac{1}{4}$ minute (for assistance in counting the foetal heart sounds), and at St. Mary's Hospital electric foot-operated tables. Forrigger's anæsthetic apparatus is largely used—a mixture of ethylene and gas being favoured.

Situated at one end of the theatre floor the *isolation unit* contains five or six single rooms, an examination room, a small clinical laboratory, and its own delivery theatre. All cases which are either obstetrically or generally infected are admitted to this unit and dealt with there.

Other Departments

Laboratories are numerous, and there is every facility for rapid and efficient testing in immediate conjunction with the clinical work. In the Chicago Lying-in Hospital there is a small clinical laboratory on each floor, and in all the hospitals there is a main clinical laboratory as well as a biochemical laboratory and a morbid anatomy laboratory. These are all very fully staffed by trained female technicians and controlled by a pathologist or biochemist. The routine is to cut all sections in wax and to mount a number from each specimen. Biochemical research as well as routine work is carried out.

The *sterilising departments* are unusually interesting at the Chicago Lying-in Hospital. Theatre sterilising is of course carried out on the main theatre floor. There is, however, a basement department under the control of a specially trained sister which deals with all materials necessary for the wards. Here drums containing dressings and the like are sterilised, and cupboards containing rows of shelves are specially provided for the reception of materials which may be needed at any moment in the wards. Sterilised linen parcels containing trays with all the necessities for dressings, gastric lavage sets, intravenous sets, and materials for vaginal examination—any of these will be sent up by the special elevator as soon as a telephone message is received. Numerous sealed, labelled, and dated flasks of saline solution of varying sizes and strength and of Ringer's solution are likewise kept in readiness in this department.

The *infants' nurseries and kitchens* are of uniform type. The infants are kept in single cribs or groups of four mounted on rubber-wheeled trollies in a centrally placed nursery, of which each ward floor has one. The nursery has a glass front abutting on to the corridor and a small section which may be raised for conversation between the sister and anyone in the corridor. The infants' kitchen adjoins the nursery, and each infant has its own tray bearing its own appliances.

The infants are wheeled into the wards for feeding only. The mother is taught the special care of the hands and breasts and handles her baby only at this time. After feeding, it goes back at once to the nursery. The patient's husband and friends are not allowed to touch it while it is in the hospital; they view it through the glass wall of the nursery. Incidentally no child under the age of fifteen is allowed to visit the patient. Apparently the public are quite used to these regulations and appreciate their significance.

An *isolation nursery* comprised of four or five small single rooms is provided for those suspected of infection.

A *doctor's rest room* is always provided. This is placed on the delivery floor and is furnished as a bed-sitting room with adjoining shower and bath. Here the obstetrician may rest during the time he is engaged upon a case of labour in the hospital.

Record-keeping

The hospital records are most scrupulously kept. A large staff of clerks is engaged for the purpose and special departments allotted.

At the Royal Victoria Hospital, Montreal, all the case-sheets, out-patient notes, &c., are collected when the patient is discharged and a summary of

them is typed separately and filed. Later these are bound according to dates.

The Chicago Lying-in Hospital has separate elaborated note-sheets for the antenatal clinic, which comprises history, physical examination, obstetrical and progress sheets, as well as a special one for urine examination and blood examination. A detailed record sheet containing all possible subdivisions of the pathological states of the various systems is used and those appertaining to the particular patient marked off. Ward note-sheets are separate for the obstetric admission record, labour progress record, mother record, mother and child's identification record, and nursing record.

In the New York Hospital I was struck by the pathological record system. All specimens are kept for a minimum of five years (in case of legal difficulties). Large cabinets filled with trays of slides are placed in conjunction with bound files containing the pathological notes. A card-index system at once reveals the number of the gross specimen and slide connected with the pathological notes. It also shows the number of the associated clinical notes in the clinical record office. In a matter of minutes therefore—as was demonstrated to me—all the notes with the specimens and slides can be obtained in any case which has been operated upon during the last five years. At the end of this time certain discards are made, but many specimens are kept longer. Naturally adequate room and staff is necessary for records such as this to be kept.

The Chicago Lying-In Hospital keeps a large ribbed felt board in the resident's sitting-room upon the surface of which is registered day by day the statistics of the work done. Monthly and yearly records are photographed and filed.

Details and Impressions

In this communication I have tried to indicate what seemed to me the salient features of these large American hospitals. One cannot help but leave them with impressions so numerous as to be almost kaleidoscopic.

A number of minor arrangements appealed to me greatly. The honorary has his own private study in the hospital where he may retire in peace to conduct his correspondence or to interview visitors to the hospital. Assistants are numerous and well trained—occasionally permanent. The details are thought of and carried out for the operator; the energy output in operating is, therefore, much less than with us. Again, it was pleasant to find that close collaboration with the university faculties is maintained.

Many details, though interesting, did not attract me so much. A special oxygen room is provided in the Passavant Hospital, Chicago, in which cardiac or pneumonia cases are placed at high expense. An electrically controlled water-heating apparatus is part of the infant nursery in the St. Mary's Hospital. This ensures an immediate flow of water, heated to any required temperature, by turning an indicator on a dial. During delivery in the lithotomy position at the Passavant Hospital any blood lost runs down a metal channel into a receiver below the table. This is fitted with a plunger which registers on a vertical manometer fitted to the table the amount of hæmorrhage. This factor is correlated with the state of the blood pressure.

The nursing staff appear to enjoy a higher status than in this country. Floor supervisors correspond to ward sisters. The individual task is more highly specialised.

The cafeteria system is used for nurses' meals. Patients' meals are sent in bulk from the main kitchens to floor "serveries," where carving and distribution is carried out. The service is therefore good.

Finally, I trust that in setting down these notes I have not inadvertently conveyed the impression of dissatisfaction with our own maternity hospitals:

in so far as I know them. The majority of these are old and financially limited, whereas some of the work in America is done under wellnigh ideal conditions. But, possibly, advantages spring from the necessity to make the best of circumstances, and it may be that we in this country are compensated by the development of a kind of sixth sense which makes up for other deficiencies, in our routine and operative work at any rate.

APPLICATIONS OF PSYCHOLOGY TO MEDICINE

PSYCHO-ANALYSIS and psychotherapy in general were the subject of an address given by Dr. William Brown, Wilde reader in mental philosophy in the University of Oxford, at a meeting of the Blackpool Division of the British Medical Association on Nov. 13th.

Dr. Brown began his lecture by explaining that he himself was not a Freudian but had used the Freudian method among others for over twenty years. At the same time psycho-analysis, a treatment which might extend to 60 or 100 hours or more, could not be afforded by many patients, and in his view, despite the fact that orthodox Freudians threw up their hands at the idea of suggestion treatment, there was no necessary conflict between the full analysis and "short-cut" methods in the same field of psychotherapy. Admittedly the long Freudian analysis was the counsel of perfection, but, short of that, much could be done by suggestion methods, perhaps aided by hypnosis, to create self-confidence, to resolve difficulties, and to give to the patient a clearer view of the situation at the conscious level. The lecturer parted company with Freud in the matter of religion. He agreed that in the deep analysis aiming at liberation of repressions it was necessary to be very careful in applying religious methods to the cure of mental conditions, because they might intensify the sense of guilt—by no means the same thing as guilt itself—and thus help to reinstate the repression. But of the value of religion in assisting the patient to a deeper philosophy of life and a more complete integration of the mind he had no doubt, and he deplored the fact that Freud, who had done so much to increase the freedom of the human spirit, should be such an uncompromising opponent of religion; for it was religion taken in its widest sense, that justified the established belief in ultimate freedom and spiritual destiny.

Explaining the analytic theory and method Dr. Brown said that in analysis the patient lay passive, usually out of the sight of the physician, who encouraged him to talk out for an hour at a time the things which came into his mind. In this way mental tendencies below the threshold of consciousness had an opportunity to show themselves. Ordinarily these were repressed by what Freud originally called the "censorship" and now the "super-ego." The process of analysis was misinterpreted if it was regarded as a dragging of the unconscious into the conscious. In fact the unconscious was always trying to become conscious, and was customarily held back by the activity of the super-ego; but it managed to assert itself, though in a disguised form, when the mind was weakened through general disease, mental shock, or sustained mental conflict. It also emerged, again usually disguised, in the dream state. The scientific psychological treatment was to relieve these repressions, encouraging the tendencies out into the open under the special conditions of analysis, where they could be dealt with by the rational mind, and their energies sublimated for higher social and cultural ends.

The psycho-analyst had often to be for a time to his patient a mother-substitute or father-substitute, or both. This was where the analytical method became very exacting. There were transferred to the physician the early emotional tendencies of the patient. One of the differences, by the way, between Freud's

method and the method of Jung, which was only to a small extent of a psycho-analytic nature, was that Jung held that transference should not occur. But no one could use the Freudian method without being intensely impressed by the fact of transference. The physician must be careful not to be caught up into counter-transference, or to resent his patient's vagaries, and if he was to be free from complexes himself, and to hold up to his patient an undistorting mirror, he himself must be analysed. A careful self-analysis would serve to some extent, but it was essential that it should be preceded by analysis from someone else. After this the analyst could proceed along the lines of self-analysis, to a great extent through his dreams, the systematic study of which was the best way of working out a "psycho-analytic autobiography."

THE MEDICAL PRACTITIONER AS PATRIOT

Prof. Morelli, secretary of the Fascist Syndicate of Doctors, has sent to all members of the Italian medical profession a circular which starts by saying that, in the circumstances of the moment, all doctors must consider themselves mobilised. It points out the opportunities that fall to the doctor, who visits the houses of all classes, to give encouragement in the sacrifices and privations that are necessary if Italy is to be victorious in the economic war. Nothing should be bought from the opposing nations, and here it is especially to the women that appeal must be made. "When," writes Prof. Morelli, "called by their sufferings, we cross their bedrooms, full of powders, paints, soaps, and toilet preparations, all coming from abroad, we must cry to them that this is a crime against the country and against her soldiers."

An "auto-train of defence against air and chemical warfare" has been fitted out for the purpose of giving practical demonstrations of the means of resistance to air and chemical attack. It was due to leave Rome last month and to visit, as rapidly as possible, the whole of Italy.

"IT ALL DEPENDS . . ."

NOWADAYS, when more and more parents are taking a theoretical as well as a practical interest in education, especially of the very young, they tend to pool experience and seek help in study groups under expert guidance. To meet the need of such groups the Home and School Council of Great Britain has republished in book form¹ some articles originally printed in their official organ *Parents and Teachers*. The articles deal with such qualities as confidence, helpfulness, dependability, and thoroughness, which are treated not as moral virtues but rather as qualifications for citizenship. On the other side of the picture attributes like fear, cruelty, stubbornness, and jealousy are shown to be avoidable handicaps which greatly hamper a child's relationship with its fellows. An intermediate chapter on rewards and punishments discusses the—often mistaken—means by which adults try to encourage the desirable and avoid the undesirable elements in children. Dr. H. Crichton-Miller writes a foreword and other medical contributors include Dr. E. A. Bennett, Dr. Henry Wilson, Dr. E. A. Hamilton-Pearson, the late Dr. Ian Suttie, Dr. Emanuel Miller, and Dr. Grace Calver. Mr. G. W. Lyward, director of the Finchden Manor Clinic and School, Tenterden, expresses sympathy with the irritation felt by parents—and not confined to parents—at the refusal, or inability, of lecturers on psychology to answer specific questions based on personal problems. "It was so exasperating, my dear, I quite hoped that he would tell me what to do, and instead he asked me about myself and the other children." Too often, in short, the answer starts "It all depends. . . ." But, as Mr. Lyward points out, most lectures and all these articles are but different ways of expressing one

¹ *Advances in Understanding the Child*. Compiled by the Home and School Council of Great Britain, 29, Tavistock-square, London, W.C.1. 1935. Pp. 71. 1s.

or two simple things, and it is upon these simple things that "it all depends": notably that certain qualities are not natural to a child at a certain stage of development and that the time factor must never be forgotten. It is, for example, unlikely to be disputed that helpfulness is not natural to any small child, but it is not always realised that there may be ages at which it is not natural to be truthful, brave, polite, or grateful. To give respect to the child, that is, to give respite, to take time into account, is the lesson here set out; and in this small book will be found practical help in the interpretation of the child's attitude at various stages of its development.

NEITHER JEW NOR GENTILE

A CORRESPONDENT writes: "The sympathetic reference in your last issue to the plight of the Jewish doctor in Germany was in my mind when, opening at random the anthology 'For and Against Doctors' compiled by Dr. Robert Hutchison and Dr. G. M. Wauchope,¹ I came across the following apposite quotation: 'By his commission the physician is sent to the sick, and knowing in his calling neither Jew nor Gentile, bond or free, perhaps he alone rises superior to those differences which separate and make us dwell apart, too often oblivious to the common hopes and frailties which should bind us together as a race. In his professional relations, though divided by national lines, there remains the feeling that he belongs to a guild which owes no local allegiance, which has neither king nor country, but whose work is in the world.' This comes from William Osler's 'Counsels and Ideals' (London, 1921, second edition, p. 73). The feeling to which it gives expression is no less strong to-day."

Vacancies

For further information refer to the advertisement columns

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.
Bethnal Green Hospital, Cambridge-road, E.—Asst. M.O. £250.
Birmingham, Queen's Hospital.—Res. Surg. O. £150.
Bolton Royal Infirmary.—Asst. Pathologist. £600. H.P. £200. Also H.S. £125.
Bournemouth, Royal National Sanatorium for Consumption, &c. Asst. Res. M.O. £200.
Brighton Education Committee.—Asst. School M.O. and Asst. M.O.H. £500.
Brighton, Royal Sussex County Hospital.—H.S. Also Cas. H.S. £150 and £120 respectively.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Third Asst. for Out-patient Dept.
Chester Royal Infirmary.—H.S. £150.
Chesterfield and North Derbyshire Royal Hospital.—H.A. At rate of £150.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Walton Marsh Barnes Research Scholarship, &c. £500. Res. M.O. £250. Also H.P. At rate of £100.
Colchester, Essex County Hospital.—Sen. H.S. £175.
Croydon General Hospital.—H.P. £125.
Dreadnought Hospital, Greenwich, S.E.—H.P. and H.S. Each at rate of £110.
East Ham Memorial Hospital, Shrewsbury-road, E.—H.S. to Special Depts. and Cas. O. At rate of £120.
Eastern Dispensary, Leman-street, E.—Two Physicians.
Edinburgh, Royal College of Physicians, Kirk Duncanson Fellowship for Med. Research. £300.
Egyptian Government.—Principal M.O.H. of Cairo. L.E. £40-984. Also Director, Serum and Vaccine Institute, Cairo. L.E. £40-984.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—H.P., three H.S.'s. Also Obstet. Surgeon. Each £50.
Evelina Hospital for Sick Children, Southwark, S.E.—Third Anaesthetist to Aural and Dental Depts. 50 guineas.
Gloucestershire Royal Infirmary.—H.S. At rate of £150.
Golden-square Throat, Nose, and Ear Hospital, W.—H.S. £100.
Hafiz General Hospital.—Jun. Res. M.O. £250.
Hampstead General and N.W. London Hospital, Haverstock Hill, N.W.—H.S. At rate of £100.

Herefordshire General Hospital.—Hon. Anaesthetist. Also Hon. Radiologist.
Highgate Hospital, Dartmouth Park Hill, N.—Asst. M.O. £250.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. H.P. Also Res. H.S. Each at rate of £100.
Hospital for Tropical Diseases, Gordon-street, W.C.—H.P. At rate of £120.
Hospital for Women, Soho-square, W.—Res. M.O. At rate of £100.
Huddersfield, St. Luke's Hospital.—Res. M.O. £200.
Hull Municipal Maternity Home and Infants Hospital.—Jun. Res. M.O. At rate of £100.
Ilford, King George Hospital.—Two H.P.'s and three H.S.'s. Each at rate of £100.
India, Women's Medical Service, Countess of Dufferin's Fund.—Vacancies.
Inverness, Royal Northern Infirmary.—Bacteriologist and Pathologist. £800.
Ipswich Mental Hospital.—H.P. £150.
Kettering and District General Hospital.—Res. M.O. At rate of £200.
King's College, Denmark Hill, S.E.—Asst. Hon. Anaesthetist. Also Res. Radiologist.
Kirkbymoorside, Yorkshire Children's Orthopaedic Hospital.—H.S. At rate of £150.
Leeds Public Dispensary and Hospital.—Cas. O. and H.S. Also H.P. Each at rate of £150.
Liverpool, Women's Hospital, Catherine-street.—H.S. At rate of £100.
Manchester Northern Hospital.—H.S. At rate of £100.
Marie Curie Hospital, 2, Fitzjohn's-avenue, N.W.—Res. M.O. At rate of £100.
Middlesex County Council.—Visiting Dental Surgeon. £2 2s. per session.
Middlesex Hospital, W.—M.O. for Dept. of Radio-Therapy. £1200. Also 300.
Mile End Hospital. 50.
National Hospital square, W.C.—Two H.P.'s. Each £150. Also Visiting M.O. for Convalescent Home.
Newcastle General Hospital.—Two H.S.'s. Each at rate of £150.
Northumberland County.—Sen. Tuber. O. £1000.
Norwood Hospital for Children, Elder-road, S.E.—Asst. M.O. £250.
Nottingham City.—Asst. M.O. for Maternity and Child Welfare Work. £500.
Nottingham General Hospital.—H.P. At rate of £150.
Nottingham Hospital for Women.—H.S. At rate of £150.
Oldham, Boundary Park Municipal Hospital.—Res. Asst. M.O. At rate of £200.
Oldham Royal Infirmary.—Orthopaedic Surgeon to Fracture Clinic. H.S. to Spec. Depts. At rate of £175.
Oswestry, Robert Jones and Agnes Hunt Orthopaedic Hospital.—Res. Surg. O. £350.
Plymouth, Mount Gold Orthopaedic and Tuberculosis Hospital.—Asst. Res. M.O. £350.
Plymouth, Prince of Wales's Hospital, Greenbank-road.—Res. Surg. O. At rate of £225. Also H.S. At rate of £120.
Poplar Hospital for Accidents, East India Dock-road, E.—Second Res. O. £175.
Preston, County Mental Hospital, Whittingham.—Res. Jun. Asst. M.O. £500.
Princess Elizabeth of York Hospital for Children, Shadwell, E.—Res. M.O. £200. H.S. Also Cas. O. Each at rate of £125.
Queen Mary's Hospital for the East End, Stratford.—Res. M.O. and 2 Cas. and Out-patient Officers. Each at rate of £150. Also 2 H.S.'s, H.P., Obstet. H.S., also Res. Anaesthetist and H.P. Each at rate of £120.
Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100.
—street, W.—H.S. At rate of £150.
—Inn-road, W.C.—Second H.S. Cas. O. At rate of £150. Dist.
Obstet. Asst., Gynaecological Reg.; also Med. Reg. Each at rate of £100, and Res. Anaesthetist in Obstet. and Gyn. Unit at rate of £75.
Royal Northern Hospital, Holloway, N.—Second Ophth. Surgeon.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.S. At rate of £100. Also Hon. Clin. Asst.
St. Charles' Hospital, St. Charles'-square, W.—Asst. M.O. £250.
St. George-in-the-East Hospital, Raine-street, E.—Asst. M.O. £250.
St. Mary's Hospital for Women and Children, E.—Hon. Anaesthetist.
St. Olave's Hospital, Lower-road, Rotherhithe, S.E.—Asst. M.O. £250.
Salford, Infectious Diseases Hospital.—Jun. Asst. Res. M.O. £200.
Staffordshire General Infirmary.—H.S. At rate of £200.
—Eye Hospital.—Res. Anaesthetist. £150.
—Mid-Wales Counties Mental Hospital.—
Tunbridge Wells, New Kent and Sussex Hospital.—Cas. O. and H.S. to Fracture Clinic. £150.
Warwickshire County Council.—Asst. County M.O.H. £500.
West Bromwich, Hallam Hospital.—Res. H.P. At rate of £200.
Westminster Hospital, Broad Sanctuary, S.W.—Hon. Clin. Asst.
Medical Referees under the Workmen's Compensation Act, 1925: 1. General Medical Referee (Surgeon) for the 1
Midlothian and Peebles Dis- 1
Lothians and Peebles. 2
Referee for the Shetland Islands. 1
and Peebles, and Stirling.
Applications should be addressed to the Private Secretary, Scottish Office, Whitehall, London, S.W.1, before Dec. 9th.

¹ This anthology is noticed on another page.—Ed. L.

ADDRESSES AND ORIGINAL ARTICLES

TRAUMATIC EPILEPSY *

By C. P. SYMONDS, M.D. Oxon., F.R.C.P. Lond.

PHYSICIAN FOR NERVOUS DISEASES, GUY'S HOSPITAL; PHYSICIAN
TO OUT-PATIENTS, NATIONAL HOSPITAL, QUEEN-SQUARE,
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OUR knowledge of the causes of an epileptic explosion on the one hand, and of the pathology of cerebral injury on the other, is so small that a discussion of traumatic epilepsy is apt very soon to stray into the by-ways of speculation. There are, however, certain questions of practical importance which it should be possible to answer from the facts at our disposal. How long after the injury do the fits usually appear? What is the character of the traumatic attacks? Focal or generalised? Minor or major? What is their prognosis? Is there any means of preventing this complication of head injury or of removing it when present? What is the incidence of traumatic epilepsy among patients with head injury? Finally, if we look backwards into the earlier story of the patient with traumatic epilepsy can we discover any features that might have led us to suspect this development? The last two questions are of special importance in relation to problems of compensation. The aim of this paper is to answer these questions as well as may be in the light of our present knowledge and to suggest ways in which that knowledge might be enlarged.

PATHOLOGY

The pathology of head injuries in relation to the cerebral symptoms which they cause is still so little known that generalisations in this direction are to be approached with some diffidence. With this caution I would state that the causes of traumatic epilepsy are these:—

1. In penetrating injuries infection of the meninges and brain.
2. In a small number of cases in which the fits occur within a few hours or days of the injury, epidural, subdural, or subarachnoid hæmorrhage.
3. In the great majority of cases the cause is direct injury to the brain substance occurring at the moment of the injury with subsequent cicatricial change. The reaction of the neuroglia to traumatic necrosis has been shown by Del Rio Hortega and Penfield¹ to be of slow development but far-reaching in its effects. The large astrocytes which are drawn towards the centre of the lesion are attached by their processes to the small blood-vessels, and traction upon these results in a disturbance of the circulation, which in turn may be responsible for functional instability in the neighbouring nerve-cells.

THE LATENT INTERVAL

A distinction must be made here between early and late fits. The latter constitute much the larger group. The early attacks usually occur within the first few days; the late attacks seldom earlier than two or three months after the injury. Early attacks due to epidural or subdural hæmorrhage are associated with evidence of increasing intracranial pressure which is fatal unless relieved by operation. In other cases pressure symptoms are absent and the attacks cease. It is generally believed that in this group subarachnoid hæmorrhage rather than cerebral injury is the cause and that the later prognosis is good, but Wagstaffe² found that of

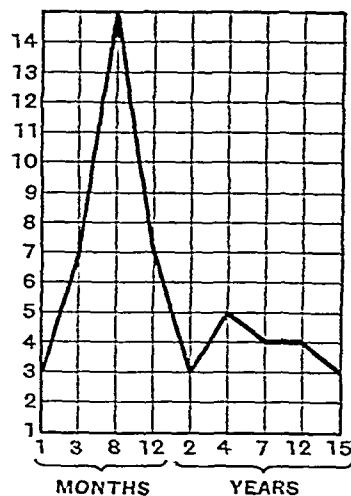
37 of his patients with gunshot wounds who developed late epilepsy 5 had had early attacks. It is to be remembered, however, that these were cases of penetrating injury. In the closed injuries of civil accident early attacks are rare.

In the case of late attacks the latent interval may be very long—up to 15 or 20 years. In Wagstaffe's series of war injuries published in 1928 the average latent period was two years and one month. The average, however, gives a false picture of the common length of the interval.

The point has been well brought out by Feinberg³ whose graph I reproduce.

From my own material, comprising the notes of 380 cases of head injury, I have selected those cases of traumatic epilepsy in which the injury occurred in civil life and was of the "closed" variety. Reference to my own cases will be limited to those within this group. There are 26 in whom I have an accurate record of the interval. In these the average latent period was 2 years and 9 months. In 17 cases it was between 3 months

and 18 months. In the remaining 9 cases the interval ranged from 2 to 16 years.



Latent period between injury and first fit. The horizontal figures represent the latent interval in months and years, the vertical figures the number of cases for each period (Feinberg).

CHARACTER OF THE FITS

Whatever the nature of the pathological process at work the character of the fit is determined by the situation of the lesion. It would seem, however, that injury of certain parts of the brain is more likely to be followed by epilepsy than others. Schou,⁴ Aldren Turner,⁵ and Wagstaffe all found a preponderance of epilepsy with parietal injuries. These and other observers are agreed that traumatic epilepsy is much more often of a generalised than a focal character. In Aldren Turner's series of 48 cases of gunshot wound there were 38 with generalised and 10 with focal attacks.

In 28 of my patients in whom full notes of the character of the attacks are available it was as follows:—

Generalised attacks	..	..	..	..	24 cases.
Generalised attacks with focal aura	..	..	..	..	2 "
Jacksonian attacks	..	..	..	..	2 "

Of the 24 cases with generalised attacks:

- 11 had minor attacks at first, major attacks later.
- 4 had minor attacks only.
- 9 had major attacks only.

From this small number of observations it would appear that in closed injuries, traumatic epilepsy in 55 per cent. of cases takes the form of generalised attacks and that the commonest variety is that in which minor attacks are followed by major.

In all the cases of this series the attacks were multiple and in only two instances was the duration

* An address given to the Sheffield Medico-Chirurgical Society on Nov. 7th.
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of the epileptic liability less than one year when the patient was last seen.

PROGNOSIS

All observers are agreed that the liability to the attacks once established tends to persist, that the fits become more frequent and more severe, and that their repetition is often accompanied by slight progressive dementia of the kind observed in idiopathic epilepsy. As a late complication of head injury, therefore, traumatic epilepsy is likely to be a cause of total disability both for the manual and the mental worker.

I believe, however, that if the minor attacks are recognised and taken into account, the prognosis is not so bad as might otherwise appear. During the first few months after a severe head injury many patients will complain of attacks of dizziness. In most instances this will appear on analysis to consist of a brief sensation of mental dimness and unsteadiness on rising from the stooping posture and is probably due to a derangement of the vasomotor system. In other instances the sensation is vertiginous and provoked by quick movement of head or eyes without change of bodily posture—the result probably of labyrinthine damage. But there are others in whom the sensation is much more nearly that of a minor epileptic attack—without apparent cause there is a momentary cessation of clear awareness with a tendency to fall. Such attacks, I believe, are not uncommon in the earlier months after head injury, and though in some cases they may develop into frank epileptic attacks, more often they do not, especially if they are adequately treated.

TREATMENT

The medical treatment of traumatic epilepsy differs in no wise from that of the idiopathic variety. I do not propose to discuss it in this paper. Preventive treatment will follow similar lines—that is to say, that after a head injury of a kind or degree which carries with it a particular risk of traumatic epilepsy, a daily dose of bromide or luminal should be continued for a period of two years after the accident.

The value of surgical treatment has received fresh attention during recent years owing to the work of Foerster and Penfield,⁶ who advocate excision of the cicatrix whenever this can be localised with reasonable certainty, either from the focal nature of the attacks, or from evidence obtained by injection of air into the ventricular system. The value of such treatment cannot be estimated until its later results have been observed in a large number of cases, but having regard to the generally bad prognosis of traumatic epilepsy the attempt at surgical relief seems justifiable whenever the situation of the epileptic focus is certain.

FREQUENCY OF EPILEPSY AFTER HEAD INJURY

Although the rate of incidence of traumatic epilepsy is of considerable medico-legal importance, the available statistics afford only a rough guide to the medical man confronted with this problem. The term head injury in the first place is all-embracing and includes cases of confusion and laceration of the scalp in which little or no cerebral injury may have occurred. The incidence of epilepsy after fractures of the skull again provides no very useful information, since severe injury to the brain may occur without fracture. An inquiry into the rate of incidence in patients with closed injuries who have been concussed would be of value, especially if the concussion had been severe enough to warrant admission to hospital. Such an inquiry would have

to cover a large number of patients, and absence of other causes for the attacks would need to be verified in the positive cases. Even this, however, would not cover the whole ground, for occasionally traumatic epilepsy may occur after an injury without concussion.

Most of the published figures up to the present are concerned with gunshot wounds of the head, which, being for the most part penetrating wounds with simultaneous involvement of bone, meninges, and brain, and with the factor of infection usually present also, are by no means comparable with the closed injuries of civil life. That the incidence of epilepsy after penetrating wounds is considerably greater than in closed injuries appears from the figures given for war wounds by observers who distinguished between the two. Thus Wagstaffe found the incidence in cases in which the dura had been penetrated 18 per cent., whereas it was 2 per cent. in all other cases. Villaret and Bailly⁷ in 500 cases reviewed ten to twelve years after the wound found 16 per cent. of epileptics among patients who had suffered penetration of the brain, 6 per cent. when only the outer table of the skull had been involved. The incidence in all patients with gunshot wounds of the head was fully reviewed by Billet and Lenormant⁸ in 1921. They noted considerable discrepancies between the reports of different observers, depending doubtless upon the type of case which provided each with his material. The surgeon tends to collect patients with severe, penetrating injuries, the neurologist sees the less severe cases. Sargent⁹ computed the incidence in 18,000 British patients at 4.5 per cent., but this figure almost certainly errs on the low side. The computation was made only two years after the cessation of the war, and many patients developed epilepsy after this time. Moreover, the diagnosis rested upon the verdict of medical boards who at that time were possibly unaware of the significance of minor attacks in the early stages. This possibility also appears in Wagstaffe's paper. Writing in 1928 he found the incidence of epilepsy 10 per cent. in 377 cases, but in addition there were 28 patients who had complained of attacks which up to that time had not been approved as epileptic by the Ministry of Pensions.

The most reliable of the statistics quoted by Billet and Lenormant are probably those of Marie and Béhague who found 12.1 per cent. of epileptics among 3623 cases and Tuffier and Guillaud 10.41 per cent. in 6664. Both these computations however were made within three years of the end of the war, so that for the reason given above they may be regarded as underestimates. The total incidence of epilepsy after gunshot wounds of the head was probably in the neighbourhood of 15 per cent., and this figure may serve as a guide to its incidence in civil injuries of comparable nature and severity.

In 221 cases of civil head injury of all kinds Bran¹⁰ found the incidence of epilepsy 8 per cent. Schou in 200 cases of head injury reported to a Danish insurance company found it 4.5 per cent. Feinberg, in his valuable paper dealing with all head injuries of whatever kind reported to a Swiss insurance company between the years 1919 and 1933, found 50 instances of traumatic epilepsy in 47,130 cases—roughly one case in a thousand. In 7 cases the fits were early—that is, within eight days of the injury. In the late cases the interval varied from one month to 15 years. Feinberg's figures are of great interest and provide what is probably a fair estimate of the incidence of traumatic epilepsy in all head injuries.

INCIDENCE OF LATE EPILEPSY IN RELATION TO
EARLIER SYMPTOMS

In what types of case does the risk of late epilepsy appear greatest?

Fractured skull.—Feinberg's analysis of the Sural statistics shows, as might be expected, that in civil accidents fracture of the skull is relatively infrequent, and that traumatic epilepsy may occur in cases without fracture. But it appears that the incidence of epilepsy is considerably higher in the group of cases with fracture of the skull. Among 3906 cases with fracture late epilepsy occurred in 19—that is, in 5 per 1000—whilst in 16,762 cases of concussion without fracture it occurred in 24, or 1.25 per 1000. Of the 19 cases with fracture 12 were fractures of the vault, 7 fractures of the base.

Brun's series of 470 fractures yielded 3 cases of epilepsy—all with fractures of the vault.

In my own series among 27 cases of traumatic epilepsy, in which the presence or absence of a fracture was determined, fracture was present in 17, absent in 10. We may conclude, therefore, that the presence of a fracture, and especially a fracture of the vault, is a point to be taken as in favour of epilepsy as a sequel.

Duration of unconsciousness.—In 24 of my own cases of closed injury in which the period of unconsciousness was accurately recorded the average duration was 9½ days. The shortest period was 1 hour, the longest 28 days.

In 6 cases (25 per cent.) it was under 24 hours.
.. 17 .. (70.8 ..) .. 4 days or more.
.. 12 .. (50 ..) .. 10 ..

If these figures are representative, it is clear that a prolonged duration of unconsciousness after the injury carries with it an increased risk of traumatic epilepsy, for in the closed injuries as a whole a duration of more than four days' unconsciousness is by no means common. On the other hand, a brief period of unconsciousness does not exclude the possibility of traumatic epilepsy. The fact is well illustrated by the following case.

A cadet, aged 18, fell from his horse in a riding-school and was dragged, his head being bumped against the wall. He got up and remounted, and subsequently ate his midday meal with his fellows. He was observed to be acting stupidly and was taken to hospital where he came to his senses six hours after the injury without any knowledge of what had happened to him. He was kept in hospital a week and afterwards had a week-end away before returning to duty. He had no headache or other immediate sequelæ. Two years later he had his first epileptic attack, waking one morning to find he had bitten his tongue. In the subsequent year he had six more attacks. This patient showed no abnormal physical signs, but the X ray revealed a linear fracture of the left frontal bone running from a point 2 inches above the supra-orbital margin upwards and backwards to end an inch from the frontoparietal suture. The family history in this case provided no evidence of inherited neuropathy.

Early fits.—Wagstaffe's observations have already been referred to in this connexion. Although it is probably true that the early fits frequently do not recur, their occurrence indicates an increased risk of late epilepsy.

Signs of focal damage.—If there is evidence in the early stages of local cerebral injury—such as hemiparesis, sensory defect, hemianopia, or dysphasia—there is theoretical ground for the belief that a scar will develop which may prove an epileptic focus. Of 25 of my own cases with adequate notes upon this point, there was evidence of focal damage in 9. As many of the patients were seen some months or

years after the injury, without medical notes of the early symptoms, the actual incidence may have been higher. In 4 cases the focal symptom was dysphasia; in the other 5 there was unilateral weakness of one or both limbs, with appropriate reflex changes.

Traumatic dementia.—Memory defect and deterioration of character and personality persisting long after the patient has emerged from the state of traumatic stupor, probably indicate diffuse organic cerebral damage and might equally be expected to show an association with traumatic epilepsy. Of the 25 cases already referred to 6 showed symptoms of this order.

Continued liability to headache.—We know very little of the causes of traumatic headache but it presumably depends upon organic damage, and when an unusually persistent liability to headache remains the inference must be that this damage has been unusually severe. In 9 of the 25 cases referred to the liability to headache had persisted for one year after the injury, or until the occurrence of the first attack. In this group of 25 patients 6 had neither focal symptoms, dementia, nor persistent headache, but of these, one had a depressed fracture of the right frontal bone and a generalised convulsion half an hour after the attack; another had a fracture of the vault and was unconscious for four or five days; another was the case already described of the cadet with a linear fracture of the vault. In only 3 cases therefore was there a complete absence of any of the symptoms which we have discussed as having a possible bearing on the risk of late traumatic epilepsy.

TRAUMATIC OR IDIOPATHIC?

There is one further question to be asked. What are to be the diagnostic criteria for traumatic epilepsy? The character and course of traumatic epilepsy may exactly resemble those of idiopathic epilepsy. Idiopathic epilepsy may begin in adult life and may occur without any family history of the malady. This is true only of a small proportion of the total number of idiopathic epileptics, but idiopathic epilepsy is a common disease. Head injuries are also common. We must therefore allow for coincidence.

A story of head injury will be presented to us by a considerable number of adults with recent epilepsy. Are we going to accept the very fact of past injury to the head as evidence of a traumatic cause for the epilepsy, provided that no other cause can be found and the family history is negative? The answer I think must be "No." The history must be that of an adequate head injury to warrant the diagnosis of traumatic epilepsy. But what is an adequate head injury? Most writers on the subject have evaded this difficult question. Feinberg, however, has gone into it fully. Among his 47,130 cases of head injury he found 100 epileptics, but in 50 of these he found the traumatic origin unproven, on the ground either that there was an epileptic inheritance, that there were other possible causes, for instance alcoholism, or that the injury had been inadequate. He lays stress on the importance especially of "bridge symptoms"—that is, symptoms such as headache, insomnia, difficulty in concentration, and giddiness persisting for months after the injury though not necessarily up to the time of the first fit. He also, and I think rightly, gives weight to a finding of blood in the cerebro-spinal fluid shortly after the injury as indicating a strong probability of cortical laceration.

In selecting my own material I have been guided by the features which with experience I have begun to expect in the past history of traumatic epilepsy.

Herein, of course, lies a fallacy. If we accept only as traumatic epileptics those patients whose original trauma has been of a certain severity, we are arguing in a circle if we say that it is patients with just this kind of injury who are likely to develop epilepsy. I can see no way at present out of the difficulty, but the general principle for guidance in a particular case must I think be this. Is there any evidence from the story of this patient's head injury which suggests that he may have sustained an injury to the cortex? If the answer is "Yes," then it is fair to assume that the epilepsy is traumatic.

There is one more aspect of this subject which deserves mention. Of the traumatic epileptics in my own series whose cases involved compensation, 75 per cent. had accepted final settlements before the first fit occurred. Most of them had recovered from the first effects of the accident and had returned to work and had been content to accept a small lump sum. Subsequently they were disabled without hope of further recompense. In any case of adequate head injury the risk of traumatic epilepsy must be remembered and allowed for. Under the Workmen's Compensation Act there is an excellent provision whereby the injured person may accept a lump sum settlement on condition that if a specified complication should arise later the question of compensation may be reopened. This provision should, in my opinion, be utilised against the risk of traumatic epilepsy much more often than it is at present. In the case of accidents to which this Act does not apply—for instance, motor accidents, of which there are now a great many—there is no such loophole, and the computation of the risk and its value in the individual case is a matter of the greatest difficulty. We need for guidance a great deal more information along the lines which I have attempted to suggest in this paper, and I hope that as the result of collective effort it may be forthcoming.

SUMMARY

1. Fits occurring within the first few days after the injury (early fits) are probably in most cases due to epidural, subdural, or subarachnoid hæmorrhage. They are relatively uncommon and do not as a rule lead to the development of late epilepsy.

2. The late fits, with which this paper is chiefly concerned, result from injury to the cerebral substance at the moment of injury with the subsequent formation of a neuroglial scar.

3. In these cases the interval between the injury and the first fit varies from a few months to many years. The commonest time of occurrence is at the end of the first year and, in the majority of cases, the interval is less than 18 months.

4. The character of traumatic epilepsy is more often generalised than focal. The attacks may be of minor or major degree. The former often precede the latter.

5. The prognosis of traumatic epilepsy is much the same as that of the idiopathic variety.

6. Medical treatment is the same as that of idiopathic epilepsy and should include preventive treatment. Surgical treatment is discussed.

7. The incidence of epilepsy after gunshot wounds of the head is from 12–15 per cent. Civil injuries are for the most part closed injuries, and the incidence of epilepsy in such cases is much lower. The estimates of different authors vary from 8 per cent. to 1 per 1000, according to the type of case reviewed.

8. The incidence of late traumatic epilepsy, with special reference to the closed injuries of civil accidents,

is discussed in relation to fracture of the skull; a long duration of unconsciousness; the occurrence of early fits; signs of focal damage; traumatic dementia; and persistent headache. One or more of these features is usually present in the earlier story of the patient with traumatic epilepsy.

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TREATMENT OF HÆMATEMESIS AND MELÆNA WITH FOOD

THE MORTALITY

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AT the Sixteenth Scandinavian Congress for Internal Medicine, held at Uppsala in 1933, I reported results I had obtained in treating hæmatemesis and melæna by giving the patients *something to eat*—i.e., varied food from the very first day, and plenty of it.

The reasons which induced me to change the treatment hitherto given—namely, fasting followed by very cautious feeding—were: (1) that exhausted patients often died after hæmorrhage, in spite of scrupulous dieting; (2) that sometimes patients with protracted hæmorrhage stopped bleeding when they were given food; and (3) that very often ambulant patients recovered from severe melæna without making any particular change in their ordinary diet. Furthermore, it seemed to me of questionable advantage to starve a patient at a time when he is presumably in special need of support. I had my doubts whether it was really desirable that the stomach should be empty of food and contain free acid gastric juice, and I thought it improbable that a diet insufficient in calories and vitamins was ideal as a means of promoting healing of ulcers.

It was on these grounds that I decided in 1931 to alter my treatment and give these patients something to eat. By 1934, when my first report appeared in the *Acta Medica Scandinavica*, I had treated 119 cases of hæmatemesis and melæna according to the new plan, and had formed the opinion that the mortality from profuse ulcer hæmorrhage was much reduced, that the general condition and the condition of the blood improved much more quickly, and that convalescence was shorter. By September of this year the total number of cases treated was 251, and they form the basis of this paper.

THE TREATMENT DESCRIBED

From the day after their admission to the hospital all the patients are given a full purée diet, together with a mixture consisting of sod. bicarb. and mag. subcarb. (ää 15.0 grammes), and extract hyoseyam. 2.0 g.; one teaspoonful three times daily; also

0.5 g. ferri lactas t.d.s. The purée diet includes the following meals:

- 6 A.M.: Tea, white bread and butter.
- 9 A.M.: Oatmeal with milk, white bread and butter.
- 1 P.M.: Dinner.
- 3 P.M.: Cocoa.
- 6 P.M.: White bread and butter, sliced meats, cheese, and tea.

The dinner includes a variety of dishes—e.g., meat balls, timbale, broiled chops, omelette, fish balls, vegetable gratin, meat gratin, fish gratin, mashed potatoes, vegetable purées, vegetable soups, cream of vegetables, stewed apricots, apple sauce, gruel, and rice and tapioca puddings. The patients are allowed to have as much as they want. In a few cases (12) in which large quantities of blood have been lost they have been given one or two blood transfusions soon after admission.

RESULTS

The entire series comprises 286 cases of severe hæmatemesis and melæna. Omitting 19 cases of cancer in the digestive tract, chiefly the stomach (in 3 of which death followed the hæmorrhage) and 16 cases of œsophageal varices due to cirrhosis of the liver (3 of which were immediately fatal), there remain 251 cases of hæmatemesis and melæna, which have been taken to be genuine ulcer hæmorrhages—i.e., arising from ulcers of the stomach and duodenum. Among these 251 patients there were 3 deaths after the hæmorrhage. In chronological order the cases were as follows:—

CASE 1.—Male, aged 45. Admitted August 22nd, 1931. Had had symptoms of ulcer for six years and had received medical treatment three times at various hospitals. Four years previously had had a posterior gastro-enterostomy. For some years the patient had also had symptoms of heart disease, and for that reason had been awarded an invalidity pension. A week before admission he had dyspeptic symptoms and vomiting, and melæna began on the day before he came into hospital. There was a hæmatemesis shortly after admission, the patient was profoundly anæmic, with hæmoglobin 32 per cent. He was put on the purée diet with pulv. alcalin. c. hyosc. one teaspoonful, and ferri. lact. 0.5 g. t.d.s. After six days in hospital he became suddenly worse with abdominal pain but no rigidity. A transfusion was given without improvement; the temperature rose and he died same day. Autopsy showed: diffuse peritonitis following perforation of a jejunal ulcer; chronic gastric ulcer; aortic stenosis with enlargement of the heart and chronic interstitial nephritis.

CASE 2.—Male, aged 40. Admitted July 4th, 1933. Had previously been treated eight times in various hospitals for chronic nephritis and heart disease; and twice in the previous year for melæna. For eight days before admission he had had black stools, and there had been a hæmatemesis on the previous evening. While in hospital he had melæna, and was in a state of suburæmia. Hæmoglobin, 48 per cent.; blood-urea, 78 mg. per 100 c.cm. Electrocardiography showed signs of myocardial degeneration. He was given the same treatment as Case 1, and his condition improved considerably. Seventeen days after admission, however, he collapsed and died suddenly. The autopsy revealed a duodenal ulcer, with hæmorrhage into the stomach from an eroded artery; cardiac hypertrophy and myocardial degeneration; and chronic nephritis.

CASE 3.—Female, aged 76. Admitted Nov. 17th, 1934. Dyspeptic symptoms for about a year. Hæmatemesis the day before admission. Very poorly on admission. During the day five stools with blood. Died within 24 hours without any treatment. Autopsy showed: gastric ulcer and hæmorrhage into the stomach, advanced arterio-sclerosis, and myocardial degeneration.

Of these three fatal cases the first ought, strictly speaking, to be omitted, for the patient did not die of

hæmorrhage but of perforation with diffuse peritonitis. The second patient died 17 days after the commencement of the treatment from profuse hæmorrhage from an eroded artery. The third died shortly after admission without having got as far as the "treatment with food." If this third case is included we get a mortality percentage of about 1½; but without this patient (for she had not been under the new treatment at all) the mortality is about 1 per cent.

DISCUSSION

I shall now compare this mortality with that for severe ulcer hæmorrhage treated on the usual lines—i.e., by complete or partial starvation followed by an ulcer diet.

Even the mass of statistics available show considerable variations. In England, for instance, the mortality is given by Hurst (1924) as about 4 per cent.; by Bulmer (1932) as 10.7 per cent.; by Chiesman (1932) as 25 per cent.; by Aitken (1934) as about 11 per cent.; by Hellier as 13 per cent., 12.5 per cent., and 8.3 per cent. for proved, probable, or doubtful ulcers respectively; by Lethby Tidy as 19 per cent.; by Davies and Nevins as 21.5 per cent.; and by Burger and Hartfall as 22.6 per cent. (hæmatemesis only!), which figure should be compared with Hurst's earlier 4 per cent., also at Guy's Hospital. These are all large collective statistics of hospitals covering a period of years.

At the Royal Society of Medicine discussion on hæmatemesis in March, 1934, the figures presented were even more variable. As Bennett points out, the differences from place to place may possibly be explained by the differences in the materials. From Canada Lynch (1927) gives a mortality of 12.9 per cent., and from New York Hinton (1931) 20 per cent. The extensive Scandinavian statistics show: from Sweden Mattisson (1931) 7 per cent., and Mossberg (1933) 9 per cent.; from Norway Frostad (1934) 9.4 per cent.; and from Denmark Lindberg (1914) 7.3 per cent., and Christiansen (1934) 7.9 per cent.

As no doubt there are national and local differences in the materials I must for comparison use a series that is uniform with mine. Christiansen's fulfils this condition, his patients being treated at the Kommunehospital Department 2, Copenhagen, where the type of case admitted is identical with mine. Like my own series Christiansen's has been reduced by omission of cancerous and varicose hæmorrhages, the only difference between the two is that the cases at the Kommunehospital were treated in the orthodox way.

For the ten years 1923–32 Christiansen had a hæmorrhage mortality of 7.9 per cent. in 289 patients—a figure which corresponds very closely with what we had in my department under the old treatment. The difference between Christiansen's mortality of 7.9 per cent. and mine of 1 per cent. is surely very striking. We have had four years' experience with 251 cases, and it seems to me justifiable to assume that the new "treatment with food" is a means of radical improvement. The mortality of 1 per cent. in the series thus treated is, I fancy, the lowest in any large series on record.

That the hæmorrhage is not aggravated putting an abundance of food in the stomach must apparently be taken as a fact; the cause may be that the empty stomach, as we know, moves more than the full one. Possibly in most cases the bleeding has already stopped before the patient comes into hospital. I am inclined to think so. At any rate it must certainly not be supposed that blood in the faeces implies that the lesion is still bleeding. With our former treatment it was on the average 13.4 days, with 4.5 defæcations, before the faeces became free of blood (Gregersen's benzidine test); with our present

treatment melæna lasts on the average 10.2 days with 4.8 defæcations (first report, 1934). This, however, does not mean that the lesion bleeds so long; it is merely that evacuation of the blood by the bowels is a long process. This interpretation is supported by Hesser's investigations showing that on the average 8-21 days elapse before ingested barium salts are completely discharged by patients with bleeding ulcers.

I believe, however, that this radical change in mortality brought about by "treatment with food," is due to something beyond its effect on the hæmorrhage itself. For my experience is that patients with hæmatemesis and melæna do not usually die until some time—on an average 8 days—after the hæmorrhage begins. Thus in my opinion they do not die directly from loss of blood, but rather from general exhaustion, often with complications. This exhaustion is no doubt primarily the result of their anæmic condition, but it is accentuated by extreme insufficiency in food and drink, with which they are ordinarily supplied at this critical moment. To me this is the explanation why, with "treatment with food," we get a mortality so much lower, for, instead of weakening the patient still more, we are giving him support when he badly needs it.

To my mind the decrease in mortality is the strongest argument for the new treatment, but there are other advantages. In the first place the patients make a much more rapid recovery from the state of shock which follows the loss of blood. They escape the broken ice, the water, the cold tea, the stingy doses of gruel, the milk, and the other trials of traditional practice, and they regain their strength much more quickly. Their blood also regenerates more rapidly—an improvement which I attribute chiefly to the mixed diet, and only secondarily to the iron given. Their dyspeptic symptoms are apt to disappear with surprising speed, and with few exceptions they have had no subjective symptoms on discharge. The advantages both to physicians and nurses are obvious, for the patients are easier to handle and naturally more contented with their lot. At the Bispebjerg Hospital we allowed them to move freely in bed, and to get up after two or three weeks. The average period before discharge has been five weeks, by which time convalescence is usually at an end. Before discharge they are given Ewald's test-meal and Kemp's test-meal, and the stomach is radiographed. They are then advised to continue with the medicine for another six weeks and with the purée diet for 4-6 months.

It may be asked why these patients with ulcers should not have a chance of getting the regular ulcer cure; in other words (as someone has put it), why should a patient with hæmatemesis be penalised by refusing him the ulcer cure? My answer is that I am not at all sure that the regular ulcer cure, with its partial starvation and extreme monotony, is really very sound. And even if it is desirable in ordinary cases I question whether it is applicable to patients who have lost blood and are in no fit state for debilitating dietetic measures.

Another question which will certainly be asked is: What about the duration of the results; does the ulcer heal permanently? On the basis of the present report I am unable to supply an answer. How far the chances of permanent cure are improved or otherwise by substituting a purée diet, or some other form of "well-balanced diet" in non-irritating and easily digestible form for the ordinary ulcer cure cannot at present be judged. With our present knowledge of vitamins, and the principles of nutrition in which

on the whole we now put our faith, it seems justifiable to assume that the healing processes are *not* favoured by an insufficient diet. I must, however, leave this problem for further study. My main thesis now is simply that whatever treatment is chosen, it should not be made more drastic for patients with hæmorrhage than for those who have none. On the contrary, it should be made less rigorous.

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RADIOLOGICAL ASPECTS OF ANOMALIES OF INTESTINAL ROTATION

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ALTHOUGH minor degrees of developmental misplacement of the intestine are quite commonly met with, failure of the second stage of rotation of the midgut loop is comparatively rare. It has been discovered from time to time post mortem and is occasionally encountered by the surgeon operating either for an unallied condition or for one of the acute abdominal emergencies to which anomalies of intestinal rotation may give rise. Where non-rotation of the gut has been discovered at operation, its existence has usually been unsuspected beforehand, and this is not surprising since, apart from an isolated and apparently neglected case reported by Mayo¹ in 1912, the condition was not observed radiologically until 1921, when two cases of "left-sided colon" were published by Hurst.² There is now however a fuller appreciation of the surgical importance of anomalies of intestinal rotation and they are no longer regarded as mere anatomical curiosities. Spitz³ has reported 3 cases of common mesentery with non-rotation of the intestine, to add to the 41 such cases in which the X ray findings have been described.

No attempt is made here to discuss the embryology of intestinal rotation: a detailed and widely accepted account of the factors concerned is given by Frazer and Robbins⁴ and both embryological and surgical aspects are fully considered by Dott.⁵

It will be remembered that it is in the midgut loop that errors of development are commonest—i.e., in that portion of the alimentary tract from the duodenal biliary papilla to the left third of the transverse colon, or that portion of the intestine which receives its blood-supply from the superior mesenteric artery. Of the three stages of rotation, the first stage takes place between the fifth and tenth weeks while the loop lies in the umbilical cord, and lasts to the time of return of the intestine to the abdomen. Failure of the first stage of rotation occurs only in connexion with the rare condition of extroversion of the cloaca, and the term non-rotation refers to a failure

in the second stage. The second stage is the stage of return and rotation; occurs about the tenth week, and comes to an end when the whole length of the colon is in its proper plane relative to the small intestine. The cæcum, which at first lies on the left side of the body cavity in the umbilical region, rotates round the axis of the superior mesenteric artery so that it comes to lie on the right side in the subhepatic region, the cæcum and proximal colon sharing a mesentery common to them and to the small intestine. The third stage is concerned with the descent of the cæcum and its fixation to the posterior abdominal wall by a fusion of its mesentery with the posterior parietal peritoneum. In this stage also, the duodenojejunal flexure is formed and fixed.

In most of the recorded cases non-rotation or mal-rotation of the intestine has given rise to no symptoms and has been discovered accidentally at operation (Malcolm,⁶ Rixford,⁷ Eggers,⁸ Klopp,⁹ Schrup,¹⁰ Corkhill,¹¹ and others). Of the 48 cases including 3 collected by Dott, 35 were accidentally discovered and the intestinal misplacement gave rise to no symptoms. In 13 cases erroneous fixation of the bowels was the directly predisposing cause of intestinal obstruction (Denzer,¹² Lee and Nye,¹³ Moritz,¹⁴ Kelley,¹⁵ and others). The immediately exciting cause is commonly a torsion or volvulus of a large segment of intestine. The surgical aspect of derangement of intestinal distribution is discussed by Green,¹⁶ and a comprehensive review of published cases is made by Haymond and Dragstedt.¹⁷

It is clear that the surgeon, in attempting to reduce a segment of bowel which has undergone torsion, will be unable to visualise the condition of the intestine before torsion if he fails to recognise the coexistence of an anomaly of rotation. As Dott points out, such failure may lead to grave errors in procedure or to injurious prolongation of the operation, or to its abandonment. The difficulty is well illustrated by a case reported by Mole¹⁸ and it has

also been remarked by Grant.¹⁹ Naturally it is impracticable to carry out full X ray examination of patients requiring immediate operation; but since the symptoms to which anomalies of rotation may give rise have often been experienced intermittently since early childhood, a large proportion of cases will come under observation before

FIG. 2 (Case 1).—Left-sided colon by barium enema.

complete obstruction has occurred; and the value of a preoperative knowledge of the X ray appearances in developmental intestinal misplacements is manifest.

CASES OF NON-ROTATION OF GUT

CASE 1.—Healthy male, aged 44. Admitted to hospital for operation for right inguinal hernia which had been present for 4½ years. His only symptom was occasional colicky pains in lower abdomen (six months). Hernia

well controlled by truss. The colicky pains were experienced only when the truss was not being worn and never when the patient was lying down. No other complaint. Stated he had an ulcer on the stomach when he was seven years of age, but no tangible information on

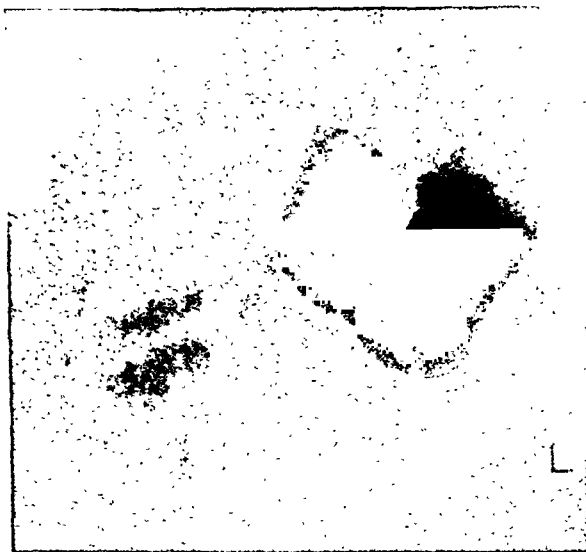


FIG. 1 (Case 1).—There is a small duodenal diverticulum and inversion of the duodenum. The duodenojejunal junction is situated in the right hypochondrium.

this point could be obtained. In view of his colicky pains (which were thought to be due to the hernia when decontrolled) the patient was referred for X ray examination of the gastro-intestinal tract. The findings are as follows:—

The opaque meal passed normally along the œsophagus into the stomach which was normally placed, presented no unusual feature, and emptied at a normal rate. There was a small diverticulum about the junction of the first and second parts of the duodenum (entirely unassociated with symptoms). The first and second parts of the duodenum took a normal course, the second part passing vertically downward a little to the right of the midline to form the lower curve at its junction with the ascending or third part of the duodenum. The direction of the lower flexure was reversed so that the third part of the duodenum was directed from below upwards and to the right. There was no duodenojejunal flexure and the junction of the duodenum and jejunum was situated in the right hypochondrium (Fig. 1). On following the course of the meal through the gastro-intestinal tract it was found that the whole of the small intestine, with the exception of a small segment of the terminal ileum, lay on the right side of the abdomen. The rate of passage of the meal through the small bowel was rather rapid, and in three hours the head of the meal had filled the proximal three-fourths of the ascending colon. A film taken at this time showed the cæcum and greater part of the ascending colon situated entirely on the left side of the abdomen. The terminal ileum entered the cæcum from right to left. Six hours after the administration of the meal saw the barium entirely in the ascending and transverse colon except for a trace in the terminal ileum. The ascending colon rose rather high and terminated in a flexure in relation to the greater curvature of the stomach. After 24 hours, the barium had been partly evacuated. The remainder was mainly distributed throughout the descending and transverse colon.

A barium enema (Fig. 2), which passed normally, confirmed the left-sided location of the entire colon. There was no great redundancy. With the patient supine, the shadows of the ascending and descending colon were very largely superimposed. The splenic flexure was normally situated and the transverse colon was represented by a short downward loop. There was some mobility of the ascending colon but this did not appear to be excessive.

On fluoroscopic examination of the thorax, the heart and great vessels were normally placed. The liver dullness was normal and the patient presented no evidence of any other developmental abnormality. The above conditions were symptomless and their discovery



FIG. 3 (Case 2).—Right-sided inversion of the duodenum. The duodenojejunal flexure is absent from behind the stomach.

accidental, so that the question of operation did not arise (except that the inguinal hernia for which the patient was admitted was repaired, the sac presenting no unusual feature). But the X ray appearances are those of failure of the second stage of rotation of the midgut loop and are in themselves conclusive.

The condition seen in this case is variously described as non-rotation, "left-sided colon" and mesenterium commune. The whole of the midgut shares a common mesentery so that, unless the ascending colon forms secondary attachments, the small intestine, ascending colon, and proximal half of the transverse colon may be freely suspended in their common mesentery by a narrow pedicle, thus forming ideal conditions for torsion or volvulus formation. Vasselle,²⁰ in describing the X ray appearances in non-rotation, remarks on the rapid rate of passage of the barium meal through the intestine, a feature which other observers have also noted. Babaianz and Kadrnka²¹ report 3 cases of non-rotation, and give the following six characteristic features in the X ray appearances the presence of which, they say, would justify the diagnosis of "common mesentery": (1) right-sided inversion of the third part of the duodenum; (2) absence of the duodenojejunal flexure; (3) position of the small intestine on the right side; (4) position of the proximal colon on the left side; (5) absence of the hepatic flexure; and (6) the formation of another proximal colic angle (which they term the "mesenteric.") Each of these features is illustrated in the case described above.

CASE 2.—Essentially similar to Case 1, and will be summarily described: Male aged 45; gastropptosis; ulcer on lesser curvature and small six-hour residue in stomach. The third or ascending part of the duodenum ran from below upwards and to the right and the duodeno-

jejunal flexure was absent from behind the stomach (Fig. 3). The small intestine was situated almost entirely on the right side and the large intestine wholly on the left side of the abdomen. Apart from the misplacements, the appearances of and the rate of passage of the barium through the bowel were normal. The intrathoracic vascular shadows were normally placed. The appearance of the colon by barium enema is illustrated in Fig. 4.

A further case of non-rotation of the gut in a male aged 44 was seen by Dr. R. E. Roberts as long ago as 1920 and has hitherto been unpublished. I have been privileged to see the original films of this case, which clearly show sinistocolon and right-sided inversion of the duodenum as in the other cases here described.

When symptoms are present with congenital malformations of the mesentery they are usually complained of in childhood. Waugh²² records 5 cases in children, 4 of whom had been under continuous treatment for "indigestion" from within the first few months of life. Attacks of abdominal pain of great intensity were experienced intermittently over a period of years, each attack of pain subsiding and leaving no trace of detectable organic change in any of the abdominal organs or their functions. The symptoms were unlike any of the well-known surgical lesions, but 3 of the cases were labelled "chronic appendicitis." The most arresting physical sign is a sense of emptiness in the right iliac fossa. This fossa is normally occupied by ascending colon and small intestine, both being components of the midgut. Either the one or the other may be absent and an asymmetrical fullness may be noted on palpating the left iliac fossa. The symptoms and signs present in childhood may then be suggestive of the condition giving rise to them, and a preoperative clinical diagnosis is not infrequently made.

Waugh describes such a case diagnosed on symptoms and physical signs in which the left-sided location of the colon was confirmed at operation. He accidentally discovered an exactly similar case of non-rotation in a second child during an operation for acute appendicitis, apart from the symptoms of which the patient never had a complaint. In both cases the condition was one of non-rotation, but in the first case (associated with symptoms) the ascending colon was enclosed in the same primitive layer of mesentery as the small intestine. No secondary fixation had occurred anywhere, so that the whole weight of the primitive midgut was supported by the stomach. In the second case (unassociated with symptoms) the ascending colon had acquired over



FIG. 4 (Case 2).—Barium enema. The colon is situated entirely to the left of the midline and the shadows of the ascending and descending colon are largely superimposed.

with symptoms) the ascending colon was enclosed in the same primitive layer of mesentery as the small intestine. No secondary fixation had occurred anywhere, so that the whole weight of the primitive midgut was supported by the stomach. In the second case (unassociated with symptoms) the ascending colon had acquired over

its whole length a secondary attachment and firm fixation to the left side of the bodies of the vertebrae and was not contained within the fold of primitive mesentery common to it and the small intestine. The absence of fixation of the ascending colon appears to be a deciding factor as to the presence of symptoms. Symptoms when present are clearly not due to the misplacements per se, but to the results of the excessive mobility or undue fixation of the bowel which may accompany them, such conditions coming outside the pale of the "normal fluidity of the abdominal anatomy" which has been convincingly demonstrated by Barclay.²³

In the adult symptoms are less often encountered. They have been described in some detail by Spitz,³ and when present are usually vague. The commonest complication in adults is volvulus of the ileocaecal segment.

OTHER ANOMALIES

Minor degrees of defective mesenteric fixation at the third stage of rotation are frequently encountered, and the undescended caecum is fully considered by Peirce.²⁴ Left-sided caecum, of course, is not very

rare and lesser degrees of "wandering caecum" are a commonplace. But they are not without significance, as Waugh²⁵ has shown in his well-known work on the morbid consequences of a mobile ascending colon. For this reason they are briefly considered here. Fig. 5 is a diagram of the colon of a male

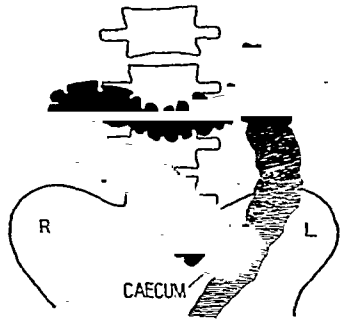


FIG. 5.—Left-sided caecum.

aged 56. The caecum was situated in the left iliac fossa from which the ascending colon rose diagonally across the abdomen to reach a normally placed hepatic flexure. The caecum retained its position on the left side of the abdomen when the patient lay on his right side and was observed there on several different occasions.

The question whether a left-sided caecum is due to malrotation (second stage) or whether it is due to defective mesenteric fixation (third stage) may arise. It has been asserted that adhesions found round a left-sided caecum may be prenatal in origin, occurring as a result of a supposed fetal peritonitis. The presence of such adhesions has been offered as an explanation of the failure of the colon to rotate—an explanation which is rejected by Dott.⁵ At any rate the differentiation between non-rotation and "excessive rotation" may be made, according to Dott, by observing the location of the appendix (or the point of entry of the terminal ileum into the caecum). If a left-sided caecum is associated with non-rotation, the root of the appendix will be found on the right side of the caecum. If a mobile caecum has crossed the floor of the pelvis to the left side, the root of the appendix will be found on its left surface. Although these points may be easily recognised when the caecum is seen at operation, there will often be difficulty when one is dealing with shadows in the region of a bound-down caecum, and the differentiation is best made radiologically by noting the presence or absence of other anomalies in the duodenum and small intestine. Spitz³ illustrates a case radio-

graphically and Denzer¹² describes one post mortem, in which the disposition of the colon was, in each case, similar to that illustrated in Fig. 5 (caecum in left iliac fossa, hepatic flexure on right side). In both cases the third part of the duodenum ran an abnormal course and the small intestine was situated on the right side of the abdomen, both cases being examples of mal-rotation. In the case illustrated in Fig. 5 the duodenum ran a normal course throughout its length, and no abnormality other than the left-sided position of the caecum was to be found. The case is therefore, in all probability, one of "excessive rotation." It may be said that if, in a case of left-sided caecum, the small intestine is situated on the right side of the abdomen and right-sided inversion of the duodenum is present, the case is undoubtedly one of non-rotation. If a left-sided caecum is unassociated with these anomalies the case is probably one of mobile caecum which has crossed the floor of the pelvis to the left side, and become fixed there, though the differentiation cannot be made with certainty on X ray evidence alone.

There are, of course, many intermediate and varied types of congenital anomalies of the mesentery which may give no radiological evidence of their presence. In the rare condition of reversed rotation, the abnormal relation of the transverse colon and duodenum to the superior mesenteric artery can be demonstrated only at operation, and since the large bowel occupies its normal position in the abdomen (except that its anterior and posterior surfaces are reversed) the condition is likely to pass unrecognised. Anomalous bands compressing the bowel may give indications of such compression, but, in the absence of any demonstrable anomaly of the duodenum, small bowel, or colon (which should always be sought, especially in children), no radiological indication of the cause of the compression. With regard to gross misplacements, an instructive case is described by LeWald. X ray examination was discontinued after an abnormality in the course of the duodenum had been noted; at operation the condition of non-rotation was found. LeWald²⁶ makes clear the importance, in recognising anomalies of rotation, of visualising the course of the duodenum throughout its length and of making a complete examination of the gastro-intestinal tract.

Where there are anomalies of distribution of the intestine other congenital abnormalities are seldom to be found. Much of the colon, together with other abdominal viscera, may be found in the pleural cavity owing to congenital openings in the diaphragm. A case of non-rotation is reported by Grant²⁷ in a patient who also had congenital absence of the left radius, thumb, first metacarpal and corresponding carpal bones. Non-rotation of the intestine could hardly be confused with transposition of the viscera, but in the rare event of a combination of the two conditions in the same individual the entire colon would lie on the right side. This was so in the case (post mortem) of non-rotation together with partial transposition of the viscera reported by Sandera.²⁸ Very real difficulties may be encountered in interpreting the varied appearances which may present themselves in such a rare combination. These appearances have been dealt with by Spitz³ who has reviewed the few cases in which the combined conditions have been found post mortem.

DUODENUM INVERSUM

The absence of the duodenojejunal flexure behind the stomach, and the presence of the duodeno-

jejunal junction in the right hypochondrium (see Fig. 1) have often been noted at operation in cases of non-rotation. But the presence of "right-sided duodenum inversum," as it has been termed, has on rare occasions been found where the second stage of rotation has been complete—i.e., in subjects in whom the small bowel and colon occupy their normal sites. According to Weinbren²⁹ (1934) only about 30 such cases are on record. It will be remembered that the duodenum itself takes no part in the actual rotation of the intestine, the normal curve of the duodenum being shaped by the growth of the head of the pancreas which develops on the left side of the duodenum as an outgrowth from it. The inversion of the duodenum is due to defective attachment of the duodenal mesentery or lack of subsequent fixation whereby the duodenum may remain mobile. Of the cases reported by Sandera,³⁰ in which, despite a duodenum inversum, the duodenojejunal flexure was present and situated to the left of the midline, 2 were operated upon; and, in addition to faulty fixation of the duodenum, a deformity of the head of the pancreas was found. Further examples of an abnormally shaped duodenum were encountered in the dissecting-room by Anderson,³¹ and in the operating-theatre by Armstrong,³² in both of which cases an abnormality of the head of the pancreas was also noted. Inversion of the duodenum, according to Sandera,³³ may be associated not only with abnormalities of the head of the pancreas, but also of the right kidney, portal vein, and transverse mesocolon. An abnormal mobility of the duodenum may however be present and give rise to symptoms without inversion and when the duodenojejunal flexure is in its normal position (Freeman³⁴).

Of the reported cases of inversion of the duodenum, some have been symptomless, while others have presented symptoms which have been ascribed to the condition. Sandera³³ holds the view that the presence of a mobile duodenum inversum may give rise to symptoms ascribable to dysfunction of the organs whose ducts empty into the duodenum, and states that the condition confers a predisposition to pancreatitis and cholecystitis. Three of Weinbren's cases gave a history of recurrent attacks of diarrhoea, and in several reported cases rapid passage of the barium meal through the alimentary tract has been noted. In 2 cases Weinbren conclusively demonstrated the mobility of the duodenum by showing the presence of right-sided duodenum inversum in the erect position, while the course of the duodenum altered so that it approximated the normal when the patients were radiographed in the prone position. This demonstrable mobility of the duodenum has also been referred to by Hürthle.³⁵ It is not always present.

The significance of right-sided duodenum inversum and the importance of its radiological recognition are that the condition indicates not only defective mesenteric attachment of the duodenum, but also the possible existence of the other congenital or acquired abnormalities already mentioned, which are frequently associated with it—abnormalities which may in themselves be unrecognisable by present-day X ray methods.

SUMMARY

(1) Reference is made to the surgical importance of anomalies of intestinal rotation and to the desirability of their pre-operative recognition. (2) Two cases of sinistrocolon due to failure of the second stage of rotation are reported. The X ray appearances throughout the gastro-intestinal tract are described.

(3) Minor degrees of defective mesenteric fixation in the third stage of rotation are common, but are not without surgical significance. A brief discussion centres round the description of a case of "left-sided cæcum." (4) Right-sided duodenum inversum may be unassociated with any other intestinal misplacement. Apart from the significance of the condition itself, it is often associated with other congenital abnormalities which cannot be detected radiographically, though they may produce symptoms. The recognition of duodenal inversion is therefore of importance and depends upon the radiographic or fluoroscopic visualisation of the duodenum throughout its length.

I am indebted to Dr. R. E. Roberts for his permission to publish these cases. My thanks are also due to Mr. H. F. Woolfenden and to Mr. R. Kennon for allowing me to discuss here cases admitted under their care.

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INDUCTION OF CANCER BY CRACKED MINERAL OILS

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(From the Laboratories of the Manchester Committee on Cancer)

THERE is no gainsaying that the high compression internal combustion engine (the Diesel) is, for heavy motor vehicles, gradually replacing the lower compression engine, and it is not unlikely that in the relatively near future the same process of evolution will take place as regards the private motor vehicle. Apparently a few years will see the majority of the many thousands of motor omnibuses in service on the London streets propelled by the Diesel-type engine, and it is because we have foreseen this probable evolution that a few tentative experiments

in relation to the medical aspects of the subject have been carried out here during the last four or five years. It is our intention here briefly to point out a few of the indications that we have received from these experiments, especially in relation to cancer.

It has been definitely established for many years that apparently any organic material that is suitably retorted can be converted into compounds carcinogenic for the skin of animals, but it is of course not to be assumed that such compounds would be carcinogenic for the internal organs of man. It is necessary to bear in mind the fundamental difference between a mucous membrane and skin, with its attendant mucus and fat respectively, and it is not unlikely that the water-soluble derivatives of the fat-soluble carcinogenic skin compounds would play a more important part in carcinoma of the lung and alimentary tract than they do in carcinoma of the skin. Direct experiments in this connexion with sulphonic acid derivatives of the lowly carcinogenic Chrysene and a highly carcinogenic synthetic tar resulted in no reaction being observed on the part of the skin. This was not surprising, but, on the other hand, it may be well to record that an extensive squamous-celled carcinoma of the fore-stomach was observed by us in a single mouse among this particular 500 experimental animals. The tumour may, of course, have been a spontaneous growth, very rare examples of which are encountered in this variety of animal, but it is rather curious that the only specimen of its kind with which we have met among over 100,000 animals should have occurred in an experiment designed for this particular purpose.

The first real direct experiments undertaken in relation to our subject were those in which mice were exposed to the fumes arising from mineral oil, cracked on an electrically heated metallic plate.

One hundred animals were used in each group, group 1 comprising those painted on the skin with gas tar, while group 2 were kept unpainted as controls. Groups 3 and 4 were corresponding lots of animals kept in the ordinary well-ventilated animal house. The following results were obtained.

(a) *Skin tumours* in group 1 arose definitely earlier than they did in group 3, the carcinogenic potency of the tar being 80 and 18 respectively. Scrutiny of Table I. shows that the survival rate of the group 1 animals was relatively poor, but despite this the number of tumours in a given period of time was always above that found in group 3.

TABLE I

Group.	Tumour.		Total.	Average week of tumour appearance.		Malignant Lag.	Carcinogenic potency.			Survival rate for week (11th to 35th week).
	Benign.	Malign.		Benign.	Malign.		Benign.	Malign.	Mean.	
1	39	13	52	24.8	36.6	11.8	77	83	80	58.56
3	22	13	35	30.8	42.3	11.5	17	21	18	74.64

(b) *Lung tumours*, which are often reported as occurring frequently among normal mice, we found in not much more than 2 per cent. among some thousand or so of our animals examined. There was no definite evidence that in the experiments under consideration the oil fumes caused an increase in the incidence of lung tumours. Ordinary catarrhal changes are frequent in the lungs of mice, but with

the present animals these changes were definitely more marked among the group 1 and 2 animals than among those comprising groups 3 and 4.

(c) A limited number of blood counts were carried out. While no appreciable difference in members of the four groups of animals was noted as regards the red cells, there were indications of a higher average polynuclear count in the animals exposed to the oil fumes. Thus:

TABLE II

Group.	Animals examined.	Average per cent. of polynuclears.
1	17	23.8
2	9	34.7
3	30	22.9
4	13	19.6

A further line of investigation was with an oil recovered from the exhaust of an internal combustion engine. From about 1 cwt. of soot moved from the expansion chamber of a 36 h.p. stationary Rushton-Hornby high compression internal combustion engine about 3 per cent. of an oily, tarry material was recovered by extraction. A dilution of 20 parts of the oil and 80 parts of chloroform was applied to the backs of 100 animals in the ordinary manner. Unfortunately the survival rate was poor, the average number of animals surviving per week, from the 11th to the 35th week, being only 31.88. Consequently but few tumours were obtained, six in all, the first arising during the 24th week, and one only becoming malignant on the 42nd week, practically at the end of the experiment, when only a few survivors remained. The carcinogenic potency, calculated according to our methods, was 17, and as we have found that with 10 per cent. dilutions of highly carcinogenic mineral oils the relative potency figures obtained are directly proportional to the dilution, the carcinogenic potency of the pure recovered oil is considered as 85. This, of course, is a high figure for any mineral oil other than shale oil, and it is what one would anticipate in view of the temperature at which the oil must have been cracked. The recovered oil was also subjected to our injection test.¹

Owing to the obvious toxicity of the oil for the general animal economy it was only possible to utilise a 10 per cent. dilution in liquid paraffin. The refractive index fall more or less confirmed the findings as regards carcinogenicity obtained by skin application. The "violence test" for ascertaining the relative amounts of dermatitic and carcinogenic constituents responsible for the refractive index fall has yet to be performed. This latter test is based on the conception that the dermatitic constituents have a lower molecular weight and are more easily oxidised or hydrogenated by the animal than is the case with the carcinogenic constituents. Consequently the difference between inflammation and cancer in our experience we imagine may be essentially one of difference in violence of reaction on the part of the animal.

Some further observations we have made are that the lighter grade Diesel fuel oils are non-carcinogenic for the skins of mice, but a heavier grade tested was definitely carcinogenic. Several of the lighter grade only, each of which was applied daily to the interscapular region of 100 mice, failed to induce a single tumour, although dermatitis was evident, and they had a high toxicity for the animal economy in general. The oils in question had a very low viscosity, having

¹ Journal of Hygiene, 1935, xxxv., 125.

superficially the appearance of a highly coloured kerosene, negative results as to carcinogenesis being of course to be expected. The heavier grade Diesel fuel oil was the older type dirty-looking oily mixture with a kinematic viscosity of 13.7. When applied daily to 100 mice it induced 18 tumours, 3 of which became malignant; but when only two applications per week were made to a further 100 animals, a much more severe test, only a single tumour was observed.

Lubricating oils recovered from the sump of private motor vehicles were more carcinogenic than the original oils used for lubricating. Again, we have observed that the carcinogenicity of crude shale oils tends to decrease as the retorting temperature is lowered, but at the lowest temperature tested—namely, 400° C.—the oil was still carcinogenic. Three oils, cracked in the laboratory at 385° C. under 50 atmospheres pressure gave the following readings:

TABLE III

Oil.	Carcinogenic potency.			
	Before cracking.		After cracking.	
Liquid paraffin	0		28	
Texas engine	1		29	
Shale spindle	244		138	

indicating the gradual approximation of the carcinogenicity of the three oils after cracking.

CONCLUSION

If mineral oils and tars are instrumental in inducing carcinoma of the lung or alimentary tract of man it is probable that the constituents of the oils causing the trouble will be found to be dissimilar to those causing skin carcinoma. We anticipate that the molecular weight of the former would be lower than that of the latter, and would be possibly similar to some of those compounds which induce dermatitis of the skin of the animal. Our future investigations in this field will therefore be specially directed towards the examination of atomised refined oils in preference to crude, cracked products.

THE U WAVE OF THE ELECTROCARDIOGRAM

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A SMALL upright wave, after the T wave, is sometimes seen in human electrocardiograms. Most modern text-books state merely that it occurs in early diastole, that probably it is due to the great vessels, and that it is of no importance. It was first described and named the U wave by Einthoven,¹ who thought that it occurred in systole and was pathological. Hering² considered that it was due to contraction of the truncus arteriosus, but this explanation does not appear to be substantiated by the work of Lewis and Rothschild³ on the time of propagation of the impulse in the ventricle. Lewis and Gilder,⁴ working on curves obtained from normal subjects, gave statistics of the U wave in health. They found that it was present in 90 per cent. of curves from lead II., its maximum height being 0.8 mm. and its average height 0.16 mm. It was also found, but less frequently, in leads I. and III. They pointed out that the U wave can have two forms: it can occur either as a sharp peak immediately after the termination of the preceding T wave

(at times, even, the U wave begins to rise before the downstroke of the T wave reaches the iso-electric level); or else it occurs as a bending of the whole of the T-P interval into a broad, shallow wave. These are later referred to as Types I. and II. respectively.

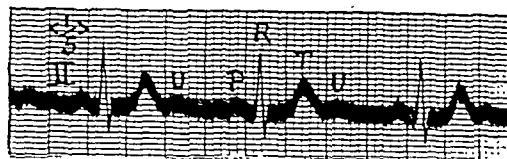


FIG. 1.—Lead II. Type I. U wave.

Two recent contributions on this subject may be mentioned here. Maekowa,⁵ working with strips of frog's heart, took simultaneous myographic and electrocardiographic tracings, and concluded that the U wave was due to prolonged contraction and delayed relaxation at the basal part of the ventricles. Clinically, he considered that the Type I. wave was normal and the Type II. abnormal. Trendelenberg⁶ found U waves frequently in lead II., and almost constantly in needle-leads taken directly from the

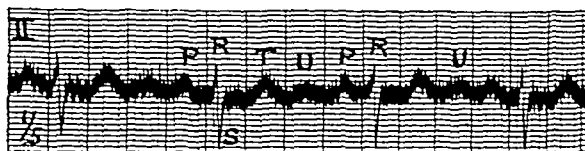
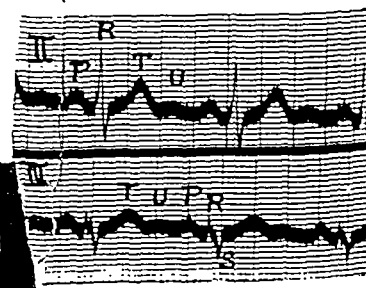


FIG. 2.—Lead II. Type II. U wave.

chest wall. He suggested the following three possibilities in explanation: (1) that it is due to the rapid current of blood in the great vessels at the beginning of diastole; (2) that it is due to the presence of fibres in the heart, which actively dilate it at the end of systole—the so-called "active diastole"; (3) that it is due to active systole of the aorta. However, he did not state which of these explanations he favoured.

The present inquiry was undertaken to see what new facts about the wave might be discovered.

There are here collected 104 patients showing a U wave of a minimum size of 0.5 mm. (In Table I., giving the heights of the wave in the various leads, some are recorded smaller than this minimum, but in every such case



3.—Leads II. and III. U waves in both leads.

there was a wave of the stipulated size in another lead.) Of these 104 patients, 86 were seen in out-patients by three of the consulting staff of the Heart Hospital during the years 1932-34; this is an incidence of 2.3 per cent., as 3744 new out-patients were seen in all by these physicians during that period. There are 109 tracings for analysis, as several tracings were taken from some of the patients.

The following examples illustrate the various types of U wave.

Fig. 1. Lead II. This shows the Type I. wave, that is, the peaked wave arising directly after the end of the

T wave. In one or two cycles the U wave upstroke begins before the end of the downstroke of the T wave. It was taken from a woman aged 26, who complained of tiredness, palpitation, and giddiness. She had a rheumatic history, and there was a soft systolic murmur heard all over the precordium, but no definite valvular disease was found.

Fig. 2. Lead II. This shows the Type II. wave—that is, a bending of the whole of the T-P interval. The patient was a woman aged 70, with a heart enlarged to right and left. She complained of a constant ache in

The U wave was found twice in lead I. alone, 28 times in leads I. and II., and 4 times in leads I., II., and III. It was found 47 times in lead II. alone, and 26 times in leads II. and III. In lead III. alone it was found twice.

CLINICAL ASSOCIATIONS

It happened that of the 104 patients, 52 were men and 52 were women.

TABLE II

Age of the Patients and their Clinical Condition

Classified by age:—			
Under 15 years of age	5		
Between 16 and 30	29		
" 31 .. 45	20		
" 46 .. 60	36		
More than 60 years of age	13		
The age of one patient was not stated.			
No evidence of cardiovascular disease	33	(32)	Per cent.
Arterio-sclerosis	22	(21)	
Rheumatic carditis	19	(18)	
Hypertension	12	(11)	
Thyrotoxicosis	5	(5)	
Post-toxic states	5	(5)	
Wassermann reaction positive	2	(2)	
Other cardiac conditions	6	(6)	

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It will be seen from Table II. that the U wave is found in both sexes, at all ages, and in a great variety of cardiac diseases, as well as in health. There are only 2 cases in this series with a positive Wassermann reaction, and in neither patient was there any evidence, clinical or post mortem, of syphilitic aortic disease. This is rather curious, in view of the large number of sufferers from specific aortic regurgitation who are encountered in the hospital out-patient department. Of the 5 patients with thyrotoxicosis, no less than 3 had hypertension also. This condition, which is a comparatively rare one, is associated with a high systolic and a low diastolic blood pressure. If any inference can be drawn from these figures, it is that a high pulse pressure is favourable to the production of the wave, provided that this pressure is not due to disease of the root of the aorta. Disease in this region appears to be unfavourable.

In order to test Maekowa's suggestion⁵ that the Type I. wave is normal, and Type II. pathological, 100 tracings were analysed as to the form of the wave and the presence or absence of heart disease, with the following results:—

	No heart disease.	Heart disease present.	Total.
Type I.	15	30	45
Type II.	14	25	39
Indeterminate	4	12	16
	33	67	100

It will be seen that cases with or without heart disease are divided equally between the two types—that is, there is no correlation.

In summary, it may be said that the U wave is found in approximately 2½ per cent. of a large series of patients. The wave occurs in two forms, either as a sharp peak immediately after the T wave, or as a low broad wave occupying most of the interval between the T wave and the succeeding P wave. It has been suggested that these types are respectively normal and pathological, but no evidence for this is forthcoming from this series. The wave is found in health and in a great variety of pathological conditions, but I have not found it in syphilitic aortic disease, with or without aortic incompetence. With this exception, a large pulse pressure seems to favour the appearance of the wave.

I should like to express my gratitude to Dr. T. F. Cotton, Dr. J. M. H. Campbell, Dr. J. Parkinson, and

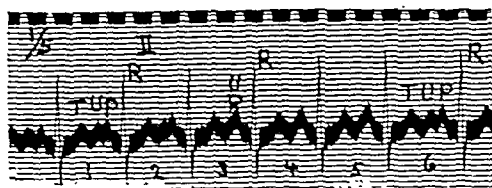


FIG. 4.—Lead II. Summation of the U wave with the succeeding P wave in cycles 3, 4, and 5.

the chest and acute pain after exercise. Her blood pressure was 210/110, and the diagnosis hypertension and angina pectoris.

Fig. 3. Leads II. and III. This shows a well-marked U wave in both leads. It was taken from a man aged 32, who was rejected for life assurance because of a soft systolic murmur. Clinically there was no heart disease.

Fig. 4. Lead II. This is a noteworthy tracing. It was taken from a woman aged 22, who complained of palpitation and an irregular pulse. Clinically there was no heart disease, the irregularity being due to premature contractions. The tracing shows tachycardia (rate=115) with pronounced U waves. In cycles 3, 4, and 5 only two waves can be seen between the successive QRS complexes. This is due to the summation of the U wave

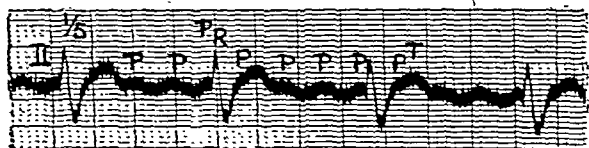


FIG. 5.—Lead II. Auricular flutter simulating U waves.

with the succeeding P wave. It will be noted that the second wave in these cycles is higher than the P wave usually is, and that the duration of the cycle is less than usual; this can best be seen by comparing cycle 5 with cycle 6.

Fig. 5. Lead II. This is included to show the difficulty sometimes met with in distinguishing the wave. It is a case of auricular flutter, which closely simulates the Type I. U wave.

ANALYSIS OF THE TRACING

The 104 patients yielded 109 electrocardiograms showing this wave. Almost always, a patient who once showed this wave showed it well over a sub-

TABLE I

Height of the U Wave (in millimetres)

	Lead I.	Lead II.	Lead III.
Less than 0.5	24	1	18
0.5	3	6	9
0.6	1	2	2
0.7	1	11	2
0.8	2	26	1
0.9	1	23	1
1.0	3	24	1
1.1	..	23	..
1.2	..	2	..
1.3	..	..	..
1.4	..	..	..
1.5	..	6	..
More than 1.5	..	2	..
	34	105	32

sequent tracing was taken. Table I. gives the height of the wave.

Dr. B. T. Parsons-Smith for their kindness in allowing me full use of their clinical material, and to Mr. Stowe, the hospital technician, for his help.

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ARTERIAL EMBOLLECTOMY

IN A CASE OF BRACHIAL EMBOLISM

By VICTOR RIDDELL, M.A. Camb., F.R.C.S. Eng.
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THE first successful case of arterial embolectomy in this country was reported in 1925; up till then nearly all the records of the operation had appeared in America and Scandinavia. Since 1925, 8 more cases have been described in England, and repetition in the medical journals of the symptoms and signs of arterial embolism has probably been responsible for its earlier and more frequent recognition. With this excuse, rather than with any claim to shed any new light on this interesting subject, I bring forward the following case.

CASE RECORD

The patient was a man, aged 57, and was first seen by Dr. J. A. Tierney, of Wimbledon. He complained of acute pain in the lower part of the left forearm and back of the hand, which came on suddenly at 9 A.M. while he was dressing. This was rapidly followed by increasing difficulty in movement, the forearm eventually becoming quite "dead." When Dr. Tierney saw him at 10 A.M. the patient was in a state of shock and covered in profuse perspiration. The whole of the left forearm and hand were marble-white. Slow coarse movements persisted, but fine movements of the fingers were entirely lost. The nails were cyanotic and return of colour after pressure very slow. There was no sign of radial or ulnar pulsation

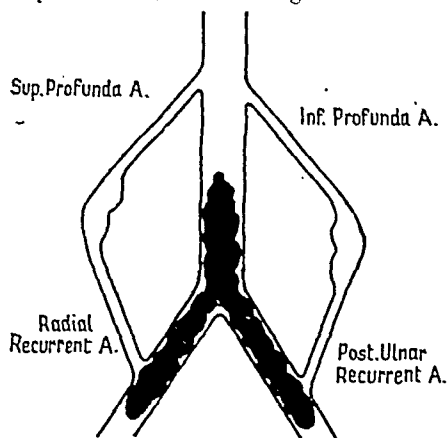


FIG. 1.—Embolus blocking the main channel and involving the origin of the radial and ulnar collateral vessels.

but definite pulsation could be felt in the brachial artery 2 inches above the bend of the elbow. There was complete loss of cutaneous sensation in the lower half of the left forearm and hand. Heart: the apex-beat was in the sixth left intercostal space, 5 inches from the

lateral sternal margin, and the heart sounds were irregular in rhythm and muffled. The rhythm in the palpable brachial artery was also irregular, and a diagnosis of auricular fibrillation with brachial embolism was made. Morphine gr. $\frac{1}{4}$ was given, but this barely influenced the pain at all, and the dose was repeated two hours later. The pain persisted with great severity until 9 hours after its onset. The patient was admitted to St. George's Hospital at 11 P.M., under Mr. G. A. Ewart, 14 hours after the pain had begun.

On admission the initial state of affairs had considerably altered, the pain had almost entirely subsided, and what remained was felt in the back of the hand; the forearm

was mottled with blotchy areas of cyanosis, some degree of function had returned, and the anaesthesia was less complete, but the forearm was still cold. The radial and ulnar arteries were impalpable and inaudible, but the brachial artery could be felt 3 inches above the centre of the antecubital fossa, that is, 1 inch higher than where

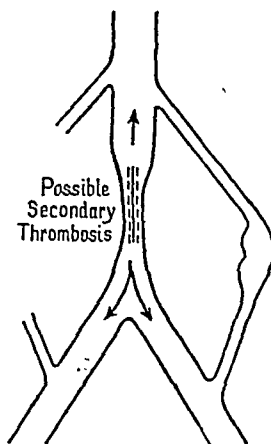


FIG. 2.—Embolectomy and arterial suture resulting in narrowing of the brachial artery, with the risk of secondary thrombosis up and down the vessel.

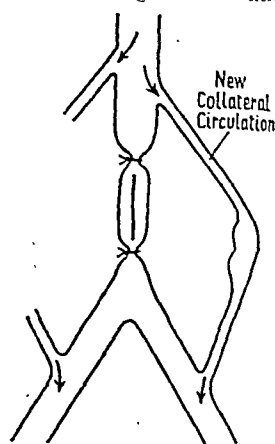


FIG. 3.—Artery ligatured. Distal collateral vessels freed from the possibility of involvement by secondary thrombosis.

it was previously palpable, presumably owing to retrograde thrombosis.

The operation was carried out under local anaesthesia along the usual lines of arterial surgery, and an embolus straddling the bifurcation of the left brachial artery was removed through an incision over the upper part of the clot. Blood flowed freely on relaxing first the upper and then the lower control (a fine rubber catheter) but no obvious improvement in the colour or temperature of the limb or return of the radial pulse was observed, so that arterial suture rather than ligature was decided upon. The artery, already in spasm, was much narrowed by the suturing, and I was doubtful about its patency at the end of the operation. Additional periarterial sympathectomy was not deliberately performed.

Progress.—The wound healed by first intention and function, and sensation gradually returned until they were complete in ten days' time. The left radial pulse was not palpable until six weeks after the embolectomy, and then was not as strong as on the opposite side. The operation was performed on June 24th of this year and the man remains in good health up to the present. The heart is still fibrillating. (Fig. 1.)

DISCUSSION

I feel that the successful result of this case was due to the removal of the peripheral extension of the clot which was blocking the ulnar and radial collateral vessels, and for this reason it is always worth while doing an embolectomy even in late cases. The majority of successful cases have been operated upon within six hours, and the length of the interval before operation is recognised by all authorities as being the most important single factor in the prognosis. In the present instance embolectomy was not performed until 16 hours after impaction.

This case, like most others on record, showed the following characteristic features:—

- (a) *History* of previous cardiac disorder. The patient had rheumatic fever three times as a child.
- (b) *Aged 57.* The average recorded age is 50-60.
- (c) *Cause.*—The three common causes are cardiac disease, post-operative thrombosis, and generalised infection; in this case the patient had auricular fibrillation.
- (d) *The initial symptom* is almost always sudden severe pain, although occasionally numbness precedes the pain. The pain is characteristically felt distal, and sometimes far distal, to the site of obstruction, as in this case, and is

of no value for localisation other than to indicate the limb involved; gradually the pain moves distally in those cases in which an effective collateral circulation develops.

(e) The *anæsthesia* which is always present to some degree also depends upon the efficiency of the collateral circulation, and is equally valueless for localisation of the embolus.

(f) *Clinical triad* of "pain, pallor, and paralysis," to which must be added absent pulsation in the arteries of the limb below the site of impaction of the embolus.

(g) *At operation*, vigorous pulsation of the vessel proximal to the embolus, distension of the vessel at the site of the embolus, and contraction below. (Figs. 2 and 3.)

The historical aspect of this subject has been so well reviewed in previous papers by others that I must unwillingly make no further reference to it.

Of the 9 successful cases already referred to 6 were reported by Jefferson, 1 by Holdsworth, and 1 each by Banks and Larks; of these, 4 were associated with auricular fibrillation, 4 were post-operative, and 1 occurred in a patient with an ischiorectal abscess who was awaiting operation.

With regard to the operation itself at this level, in agreement with F. W. Holdsworth, I would suggest that the aim of the operator should primarily be to establish a proper collateral circulation rather than to concentrate on the hope of re-establishing a flow through the main channel, an occurrence which, as far as one can judge from an isolated case, probably never occurs after suture in the narrow arteries of the upper limb. This will best be achieved by removing all extension of the clot in the main vessel from any large branch or branches and by ending the operation by a procedure which minimises the chance of future involvement of the collateral circulation.

To effect this, ligation of the artery immediately above the site of incision is suggested in all cases of brachial embolism, provided that before this is carried out evidence of a good collateral circulation can be demonstrated during the operation. That such a circulation is in action may be assumed if (1) after removal of the clot, and with the artery controlled above and below the opening into its lumen, the patient remarks that the limb feels warmer (which will also be apparent to the operator) and (2) blood flows from the lower end of the vessel on releasing the distal control.

The advantage of ligation, apart from its simplicity, is that it precludes recurrent thrombosis at the site of the previous impaction and incision, where the vascular lining has been damaged, and of secondary thrombosis from here. It has also been conclusively shown by Wolf that there is less risk of gangrene developing after arterial ligation than when the obstruction is due to an embolus, and furthermore the chances of gangrene are smaller after ligation of the arteries of the upper than of the lower limb.

If arterial ligation is decided upon, two ligatures will of course be required, one above and one below the site of incision. It should be noted that the incision in the artery should be made if possible below the level of the embolus, should not be longer than one centimetre, and should not be made opposite the origin of a large branch.

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ARTERIAL EMBOLISM.

By G. R. GIRDLESTONE, B.M. Oxon., F.R.C.S. Eng.

HON. SURGEON TO THE WINGFIELD-MORRIS ORTHOPÆDIO HOSPITAL, OXFORD

A MONTH ago I was urgently sent for by Dr. W. L. Wainwright of Henley to see a patient at Wargrave. This was a man of 71 who for some years had been bothered by mild intermittent claudication. This year he had been rather better and had been shooting over dogs in Scotland in August. But the morning before I saw him he had felt some pain in his left thigh, and tried to walk it off unsuccessfully. In the afternoon he went to London. The pain continued and in Paddington Station on the way home the pain suddenly became very severe, he fainted and fell, bruising his forehead. He was brought home, the severe pain continuing. This got even worse at night, but he bore it in stoic fashion only sending for Dr. Wainwright in the morning. Dr. Wainwright found his left lower limb pale and cold and was unable to detect any pulsation below the bifurcation of the femoral artery. I saw him at 11 A.M. and found him as his doctor had described. Pulsation was present about the level of Poupart's ligament but none below. Motor paralysis was incomplete. The pain was severe but a little better than at its worst. I agreed with Dr. Wainwright's diagnosis of an arterial embolism at the femoral bifurcation.

The patient was transferred with the least possible delay to a nursing-home at Reading, where all preparations for the operation had already been made through the ready help of Mr. F. H. Aitken Walker who was also kind enough to assist me in the operation. The patient was taken straight into the theatre. I made an incision with its centre over the bifurcation of the femoral artery. Under normal circumstances it is easy to find and expose an artery. The pulsation can be felt and seen; but where there is no pulsation one misses its guidance very much. I approached the artery with caution, palpating it gently to and fro from the pulsating common femoral to the non-pulsating superficial and back, so as to identify exactly the whole length of artery with which I had to deal. As I was doing this the pulsation suddenly returned throughout its whole length. Within a few seconds the patient expressed an immediate relief from the pain which had been severe and constant, and said that the leg felt quite different. Dr. Wainwright at the same time found that pulsation in the posterior tibial had returned. It was clear that our object was attained so I closed the wound. Within a few minutes the last trace of his pain had gone and before long the whole limb was warming up. A quarter of an hour later (after his return to bed) both legs were equally warm, and half an hour later the affected leg was warmer than the other.

His convalescence was uneventful; he complained of some stiffness in the posterior muscles of the thigh, but this passed off in the second week as soon as he began to move his leg about in bed. Since then he has done well. I saw him on Oct. 18th. There was a little wasting and loss of tone in the muscles of his left thigh. He has already returned to almost all his ordinary activities. He is still occasionally bothered by the old intermittent claudication.

I conclude that by sheer good luck my palpation moved the embolus from the bifurcation of the femoral into the profunda femoris. What was in this case a happy accident might perhaps on other occasions be an aim, and palpation directed toward the persuasion of an embolus into the less important branch might be recognised as a manoeuvre worth trying before opening the artery.

NOTE

I sent the above report to Mr. Geoffrey Jefferson of Manchester, as I had very much appreciated

hearing his admirable address on the subject given at Bournemouth in 1934. He reminded me that in the last paragraph of his paper¹ he had recommended attempting to massage the clot into the subsidiary vessel. He writes as follows:—

"I have referred to such a side-tracking as the explanation of the sudden recoveries that may undoubtedly occur in embolisms before such time as the clot becomes adherent to the intima, but it seems to me that a practical hint might be taken from these happy chances, and that when it does not happen of itself we should try to compel it. The first step would therefore be the exposure and temporary control of the main vessel above and below the embolus in the ordinary, followed by a deliberate attempt to massage the clot into the subsidiary, branch. If this failed the operation would be proceeded with on normal lines and the artery opened."

The only difference between his recommendation and my experience is that in my case the manipulation succeeded (fortuitously) without temporary control of the vessel, and I imagine that in my case there may have been an advantage in avoiding even temporary compression of an oldish artery. Furthermore I would suggest that there is more likelihood of coaxing the clot into the artery if the fingers are aided by the pulsating pressure of the blood. But if temporary control of the main trunk is avoided the clot may be inclined to go the wrong way, therefore one of the fingers following the embolus up the main branch had better remain in place just below the bifurcation. A finger can be the gentlest means of control, and can be applied without raising the artery from its bed.

A CASE OF ATROPINE POISONING

By VIVIAN M. MÉTIVIER, F.R.C.S. Edin., D.O.M.S.

HON. OPHTHALMIC SURGEON, COLONIAL HOSPITAL,
SAN FERNANDO, TRINIDAD

ATROPINE instilled in watery solution sometimes causes poisoning in children attending the outpatient eye department. The signs and symptoms are reddening of the face, dryness in the throat, nausea, and a quickened pulse-rate. There is usually some excitement, and occasionally mild delirium is seen with hallucinations. According to the dominating passion, pennies and marbles may be the subject of illusion, and the delirium is generally of a pleasing kind. Great restlessness passing on to delirium, after cataract extraction, calls for cessation of atropine instillations, among other measures. The following case of an old lady developing hallucinations after using atropine drops for treatment of cyclitis is somewhat unusual.

A. B., aged 74, European, had a left cataract extraction in 1918 with good visual result. There is a mature cataract in the right eye. She was first seen by me with an attack of iridocyclitis in July, 1930, the left eye being affected. The attack recurred in September, 1932, May, 1933, and in July, 1934. On each occasion atropine drops, 1 per cent., were used twice daily, applications being made to the left eye only. Good recovery resulted after each attack, only a few very small whitish spots of keratitis punctata eventually remaining.

On June 8th, 1935, she came to see me again with another attack of cyclitis in the left eye. She also complained of some discomfort in the right eye, but there was no ciliary or conjunctival injection in that eye. On further examination however a few old spots of K.P. were seen. Atropine drops, 1 per cent., were ordered for both eyes twice daily; and on being questioned about the

drops that had been used the previous year I consented to their being instilled, provided that the solution was quite clear. (It is my practice here to have all eye drops made up in a saturated solution of chlorotone in order to prevent fungus growth.) On the following morning the patient's daughter reported that her mother had been a little excitable during the night and that she had seen imaginary objects. The patient, who is still active—and she looks well for her years—affirmed that she had seen, among other things, a young woman sitting at the foot of her bed. She stated that "she was quite a pleasant young woman," and added with emphasis, "I was curious and very interested to learn what she was doing there." She also said that her face had felt quite flushed and that her throat had become very dry.

It is to be noted that the delirium was of a pleasing kind in this case, which suggests that the delirium that develops after cataract extraction, as a post-operative complication, may not be due in any way to atropine. A private patient of mine in Port-of-Spain developed delirium tremens in 1932 the day after a cataract extraction. He imagined that Chinese men came into his room to worry him and he made attempts to fight them. He was allowed to get up and walk about in front of his bed with only a perforated aluminium shield to cover the eye that had been operated on. Hyoscine and morphine were resorted to, and he made a good recovery with very serviceable visual result. Atropine instillations were not discontinued in this case. It is possible that in the case of the old lady the atropine drops may have increased in strength, for they were made up a year previously and had probably lost fluid by evaporation. It was also the first occasion on which atropine drops were ordered for both eyes. In any case here is reason to make us still more careful in the use of this valuable and powerful drug.

FOREIGN BODY IN MALE BLADDER

By JAMES COOK, F.R.C.S. Edin., D.P.H.

DEPUTY MEDICAL SUPERINTENDENT, BIRKENHEAD
MUNICIPAL HOSPITAL

FOREIGN bodies of any considerable size introduced into the male urethra seldom (for anatomical reasons) get beyond the membranous portion. The following case is therefore unusual.

A youth of 18, somewhat retarded mentally, was admitted to Birkenhead Municipal Hospital on May 14th, 1935, complaining of lower abdominal pain, dysuria, and much frequency of micturition of some five weeks' duration. There had been no vomiting or intestinal derangement and the possibility of venereal infection was denied. The temperature on admission was 99.4° F. There was suprapubic tenderness and the prostate was enlarged, soft, and tender. The urine contained albumin and red blood corpuscles, but the only organism discoverable was *Bacillus coli*. Radiography was carried out to exclude vesical calculus and the radiologist's report was that there was no evidence of renal or vesical calculus, but that there was the stump of a pencil in the rectum. On being questioned the patient stated that he had swallowed the pencil.

Rectal examination failed to confirm the X ray findings and the hamaturia persisting, a cystoscope was passed on May 16th. The bladder was acutely inflamed and was found to contain the suspected foreign body, which was removed by the suprapubic route. Recovery was uninterrupted. The youth finally admitted that he had pushed the pencil along his urethra some five weeks previously, taking twenty minutes to complete the manoeuvre. The specimen, covered with phosphates, measured $1\frac{1}{2}$ in by $\frac{1}{2}$ in. and stripped of phosphates measured $1\frac{1}{2}$ in by $5/16$ in.

I am indebted to Mr. R. A. Grant for permission to publish these notes.

¹ Brit. Med. Jour., 1934, II, 1090.

MEDICAL SOCIETIES

BRITISH PSYCHOLOGICAL SOCIETY AND
MEDICO-LEGAL SOCIETY

At a joint meeting on Nov. 20th of the Institute of Medical Psychology with the medical section of the British Psychological Society, the chair was taken by Dr. EMANUEL MILLER, president of the latter, and a discussion on

Nullity and Impotence

was opened by Dr. E. A. BENNET. Very few marriages, he said, were annulled—about 38 per 100,000 in England and Wales—and other reasons than impotence might be advanced in some of these. The medico-legal conceptions of impotence in relation to nullity suits were by no means clearly defined; the work of the psycho-pathologists remained almost unnoticed by writers on the subject. Impotence was caused by certain physical defects, and if these existed, unknown to the other party, at the time of marriage, the contract might be rendered void. The defects could be found on examination, and the medical witness could state emphatically that copulation was permanently impossible. In functional or psychical impotence no physical defect was observable on examination, and to this form of impotence, Dr. Bennet said, his paper would refer. In a woman it might evoke observable changes, as in vaginismus and genital hyperæsthesia. Psychogenic influences were the commonest causes of impotence in marriage and, if irremediable and not disclosed, should be grounds for nullity. F. J. McCann had declared that a medical witness was not justified in diagnosing impotence in the absence of physical defect, and J. Glaister said that from the medico-legal aspect mental causes did not rank as causes of impotence. Nevertheless, any cause creating a barrier to coitus legally gave grounds for declaration of nullity, and decrees had been given when a man was found to be impotent only quoad his wife and not necessarily with other women. The term "selective" should be substituted for "relative" to describe impotence in one partner of a particular marriage.

It was possible, Dr. Bennet maintained, for a medical witness to make a dogmatic statement on the question of impotence in the absence of injury, disease, or defect. If the wife could not offer evidence of virginity and aptitude, nullity proceedings might fail in the absence of any evidence of the selective impotence of the man. A complex series of influences was at work in the married state, social concomitants being added to instinctive urges. Friction in that complicated unit, the married couple, might be easy of access or difficult to locate and remove. Friction upset smooth running, stresses and strains were observed, and incompatibility of outlook was reached. Impotence might be found at any stage of this process. Conscious likes and dislikes were important. Perhaps for conscious, often for unapprehended, reasons the emotional lives did not blend. Both partners must be interviewed. Adler's views were helpful: he held that impotence was traceable to a lack of liking and training for relations with others. Impotence was never found alone, and the individual's life must be surveyed; if the interview revealed no other psychoneurotic symptoms it would be rash to diagnose impotence. Inquiries should be made about the past and present attitude to the parents.

Dreams often threw light on unconscious motives at work.

In the majority of cases impotence cleared up with suitable treatment and a coöperative partner, but the suggestion of a nullity suit introduced a new and emotionally disturbing element which might well prevent cure. The patient's humiliation was thereby made public, and he had lost the coöperation of his wife. Impotence in a woman was rare, but she might find coitus too repugnant, or refuse it for fear of pregnancy. This might be grounds for nullity but was not impotence, and might equally well be found in the man. Mental health in such cases of refusal might be quite sound, but nullity might be declared on legal grounds. If, however, a man or woman consciously coöperated up to a point and was then unable to continue as a result of incomprehensible feelings, he or she had an unconscious mental conflict. It would be the duty of the medical witness to determine whether the impotence were curable or not. If there was mutual hostility treatment would be unavailing, but if there was goodwill and the psychoneurotic partner were willing to undergo psychotherapeutic treatment, the chance of cure was high. There was a wide gap between legal and psychological conceptions. In nullity cases obscurity could only be relieved by the medical witness, whose duty it was to appear and to make dogmatic statements.

Dr. ADRIAN STEPHEN commented on the inherent difference between the medical and legal professions and their approach to this problem. Impotence was not a simple entity. Considering the complicated path of development of sexual potency, it seemed more necessary to explain how anybody ever achieved normal sexual development, rather than its failure. To some extent everyone had failed. In some cases impotence depended on the connexion between the genital function and some other bodily function such as urination. In young children urination could be used as a means of self-assertion and attacks on enemies. By its identification with the sexual act this became an act of aggression instead of love, and so was inhibited. Similarly impotence might be produced by inhibitions originally imposed on sucking or defæcation. Sucking was one of the earliest physical expressions of the emotion of love and anything which interfered with the early forms might have disastrous effects on the later. An infant frustrated in suckling might approach the breast aggressively and want to bite or destroy it. A loved object in such a way became a feared, hated, frustrating, or revengeful object. The whole love life of the individual might be developed on such a pattern that what would normally be physical expressions of love became expressions of hatred, and potency might be inhibited by unconscious fear of retaliation or of soiling or injuring the loved object. The result might apply to all women, or the man might divide women into two classes: the idealised and pure with whom intercourse was impossible, and the degraded whom it was permissible to injure.

Another class depended on the œdipus complex: the unconscious fear of a rival. In such cases a possible third party had to be considered, but very often the fear was directed less to a real external figure than to a reincarnation in the man of the imago of a parent or part of a parent. Such

reincarnations might also lead to unconscious desire to limit the parents' potency. Similar factors were found in the woman. The partners might play into each other's hands. The attraction of two people depended on factors quite beneath the level of consciousness and incompatible with the conscious wishes, and the very factors which brought about a marriage might also tend to spoil it.

Mr. GEOFFREY TYNDALE said that many nullity cases never came into court, but apparently it was commoner for nullity petitions to be brought by husbands. In law it must first be proved that the marriage had never been consummated. If a man's petition for nullity, when the wife wilfully and persistently refused, were dismissed he could only get his freedom by providing her with evidence for divorce; she then had one-third of his income for the rest of their joint lives. There would be no justice until such refusal were made grounds for dissolution of the marriage or for nullity without proof of incapacity. Sir Samuel Evans had tried to grant decrees for wilful and persistent refusal but the Court of Appeal had stopped him. Counsel would welcome medical assistance, but were hindered by "medical privilege" which prevented the doctor from revealing his evidence before he entered the witness-box. He might be quite right in refusing, but counsel dared not call him. A change in the law could be made by the instructed opinion of doctors and lawyers together. In nearly every nullity case the petitioners were rather "freaks," and seemed almost incapable of telling the truth, although they thoroughly believed the tales they told.

Mr. S. E. KARMINSKI said that in cases of nullity and impotence physical defects were very rare. Medical inspectors of the court were therefore in a great difficulty. The court had to be satisfied that the marriage had in fact not been consummated and that attempts had been made to consummate it. If the marriage had not been consummated the court would readily assume that the cause was failure of one party to play his part. Courts were quite willing to recognise psychic causes. In some cases decree of nullity was given to both parties. Impotence was about equally distributed between the sexes. A woman might be untouchable because she had been taught that anything sexual was disgusting; because she confused the sexual act with the lavatory side of human nature; or because she disliked being touched by anybody. In the man a common cause was masturbation; often he could not be bothered to change his practice and became completely self-centred. In other cases previous venereal disease caused fear of infecting the wife. General hysteria might be present in either sex, the mere excitement causing loss of control and impotence. Another variety was anxiety lest he should be unable to perform the sexual act. Wilful refusal ought to be grounds for annulling the marriage. Courts were very willing, however, to infer impotence from violent forms of refusal, so that in fact wilful refusal mattered less than it appeared to from the decisions of the Court of Appeal.

Dr. H. CRICHTON-MILLER welcomed evidence of dissatisfaction with affairs in this department among members of the legal profession. Most doctors had experienced disappointment in their attempts to get across to the legal mind the things which really mattered in marital cruelty and failure. He asked what the essential justice was that the law tried to

express. It looked as if the law made two invalid assumptions: that impotence and frigidity were absolute conditions; and that these things could be objectively established about either partner. Could one defend as a legal marriage one in which one partner knew himself to be infertile before or had himself or herself sterilised immediately before marriage without revealing the fact? In any other department this would be breach of contract. What happened if there was antenuptial agreement to have no issue and afterwards one partner wanted children and the other still refused? What injustice was to be said for a marriage without coöperation as to children? Legally marriage seemed to be tied down to coitus—a very narrow aspect of it.

The CHAIRMAN thought the "freakishness" of both sides and the incidence of lying ought to be taken into account in legal proceedings, and would encourage coöperation with the psychologists.

Mr. Registrar NORBURY said if fertility were to be a ground for nullity great difficulties would be encountered. It would be very difficult to determine fertility, but consummation could be ascertained fairly easily. Marriage was a special form of contract; refusal was not a ground for nullity. The only ground at present was incapacity to carry out the contract. The courts were only too ready to infer incapacity from persistent refusal, and there would be no point in adding the latter as a cause for nullity. Absence of consummation and want of consent were the only grounds recognised by the Roman Catholic Church. The law worked smoothly at present and hard cases made bad law.

Dr. S. H. BELFRAGE said the lot of the medical inspector was not a happy one. He had to furnish a report stating that the man was apparently capable of intercourse, and could not go beyond the external genitalia and nervous system. Testicular sensation might be investigated but was not a safe guide. He might therefore have to state that a man was apparently capable when he was well known to be quite incapable with his wife—which was all that the court was concerned with. The inspectors were not now allowed to speak of anything outside the physical examination in their reports. There was no difficulty in obtaining a decree where there was wilful refusal. In 100 recent cases there were 55 men and 45 women obviously to blame. Men fell into the following categories: refusal to attempt; wish with complete failure of desire; failure of erection, with desire; and erection but premature ejaculation—the greater majority. The courts had not yet decided how far penetration must take place. Among the wives there were cases of refusal; active resistance; and severe pain owing to conformation of the parts, usually associated with refusal to see a surgeon. In some cases mutual masturbation was preferred; or there was physical incompatibility of the genitalia. The great majority of cases were based on mutual difficulties and were due to ignorance.

Dr. J. R. REES commented on the difference between the legal and the psychological points of view, and wished that a series of articles taking the matter further might be published. Penetration was not consummation to the psychologist. The subject had hardly been touched.

The openers briefly replied, Dr. STEPHEN pointing out that reform of the law was not the business of lawyers but of electors.

MEDICAL SOCIETY OF LONDON

At a meeting on Nov. 25th, Prof. G. E. GASK, the president, being in the chair, a discussion on the

Use and Abuse of Insulin

was introduced by Dr. R. D. LAWRENCE. Insulin was, he said, discovered 14 years ago, and its use had been steadily increasing for 12 years; yet, though many papers had been published on the physiological action and therapeutic use of this pancreatic hormone, the exact mode of its action and the extent of its usefulness had not yet been settled. The physiological action of insulin was most clearly seen in diabetes, in which disease it removed, only however for a short time, all the metabolic defects. These defects were, essentially, a failure to burn and store carbohydrate food in the tissues, with resulting hyperglycæmia and glycosuria, and a failure to metabolise fats. If the injection given was a large one it abolished the diabetic process in a few hours, reducing the blood-sugar, refilling the depleted glycogen store in the liver, to a less extent in the muscles, and at the same time caused the ketosis to disappear. His own view was that insulin only performed one step in the complex carbohydrate chemistry. He did not know whether it should be called a hormone, a catalyst, or an enzyme. Insulin had been advocated in a number of other conditions. When it was injected into a non-diabetic the blood-sugar was always lowered, and if enough insulin was given hypoglycæmia was produced. When given fasting, 10 units generally caused symptoms of hypoglycæmia: 20 units would within two hours cause severe symptoms which could be prevented by giving carbohydrate by mouth. Hunger was a very common and marked symptom, and it could be turned to good use in stimulating appetite where that was needed. After doses given at 11 A.M. a number of students developed such an appetite that they complained of the expense of lunching. The main indication for the use of insulin was, however, diabetes mellitus. It should be used whenever the utilisation of carbohydrate by the diabetic was insufficient to maintain the weight, health, and energy which life demanded. Its use was essential in coma, and for the continued welfare of most cases under 40 years of age; also in all cases of diabetes in childhood. Many elderly mild cases would be the better for it, chiefly for warding off complications, but many others did not need it.

The main difficulty, which led frequently to the misuse of insulin, was the fact that its action was quantitative, and that patients on similar diet value required very different doses of insulin to control the glycosuria; some needed 10 units daily, others up to 100 units. The commonest error made was to give too little insulin, when the patient derived little benefit from his daily injections. If given too much he was rendered wretched by the hyperglycæmic symptoms. The dose must be an individual one for each patient, and reviewed from time to time for the same patient. In diabetics careless of their diet an attempt to control the glycosuria completely by large doses rendered them liable to serious overdose when they ate less carbohydrate than usual. With two doses of insulin, each of 20 or 30 units, given twice daily, enough carbohydrate would be metabolised to maintain fair health and keep ketosis at bay. In France the practice of giving short intensive courses of insulin and then stopping the injections might lead to rapid improvement in

strength and weight, but at the risk of coma between the courses.

Insulin had proved such a success in diabetes that there was a tendency to try it for every metabolic irregularity. Seeing that normal people produced sufficient insulin of their own when carbohydrate was given, there was room for scepticism about the results of adding small amounts of insulin to large quantities of sugar. Some had used insulin to fatten the thin, to combat anorexia, and to prevent vomiting. He doubted whether insulin injections could make normal people utilise their carbohydrate any better. But it could promote appetite and even force the anorexic patient to eat. Insulin had been widely used for tuberculosis, and good results on appetite and weight had been published. Insulin could legitimately be used in conditions, such as prolonged vomiting in pregnancy or after anaesthetics, causing severe ketosis. He was the first to employ it in Graves's disease, a katabolic disorder associated with over-activity of the sympathetic system. When advocated for all sorts of toxæmias and septic conditions it was often a question of giving a little insulin with much glucose; and the insulin often got the credit deserved by the sugar.

The glycogen content of the diabetic heart, unlike that of the liver and skeletal muscle, was not reduced but rather increased above normal, showing that the carbohydrate metabolism of the heart did not depend on insulin for glycogen formation. Nevertheless the diabetic heart utilised much more glucose when insulin was given, and the heart often became surprisingly more efficient when insulin was given to diabetics. Conversely, partial heart failure and anginal attacks had sometimes been induced in myocardial and vascular degeneration when the sugar content of the blood was too quickly reduced.

Dr. GEORGE GRAHAM said that the deaths from diabetes in England and Wales for the past ten years had been steadily increasing; in 1900 about 2800 were recorded, in 1913 the number was 4200. In 1917 there was a sudden decrease to 3600, and the figures remained fairly stable until 1920. In the last two years before the insulin epoch the number of deaths from the disease nearly equalled the figure for 1916. Each year since then, with one exception, had seen an increasing number of deaths recorded. Last year the female deaths from diabetes exceeded the male. A similar increase was noted in other countries and no doubt apparent increases were due in part to more accurate filling up of death certificates. It was pertinent to ask why so many children and young persons died from diabetes. In the last few years none of the speaker's young patients had died of it. He feared that in small towns and villages remote from laboratories patients did not receive enough insulin. There was, he thought, a legitimate use for insulin in all cases in which the blood-sugar was raised. Such a rise occurred in association with the use of an anaesthetic, especially if accompanied by any degree of asphyxia. Much depended on the kind of anaesthetic; when open ether and chloroform were used it was wise to give 5 or 10 units of insulin, though some patients vomited in spite of it. The patients needed fluid, sugar, and salt, which could be given intravenously. The vomiting of pregnancy, if mild, was easily treated by diet and a careful régime; severe vomiting should be dealt with in the same way as post-anaesthetic vomiting. In toxic goitre insulin had no effect in reducing the toxicity, though if the blood-sugar was raised insulin would improve the general health. The chief abuse of

insulin was, he thought, abstaining from giving it, or not giving enough, especially if the patient was really ill. Insulin was sometimes wrongly given to patients who had a renal glycosuria with normal blood-sugar. Except in emergency insulin should not be given until a firm diagnosis had been made. Patients with diabetes might also have a lowered threshold for sugar, when urine tests became difficult. Severe attacks of hypoglycæmia were due usually not to a wrong dose but to a sudden improvement in the diabetic condition, or to a sudden bout of exercise. Most patients recognised the attacks early and treated them with sugar, but a few had awkward symptoms, such as incoördination, which might simulate drunkenness and fits. In the presence of severe hepatitis it was necessary to give extra glucose, so as to increase the glycogen in the liver; an ounce or two of sugar might well be given before injecting novarsenobenzol. Success had recently been claimed from the use of insulin in long-standing cases of cirrhosis of the liver. Severe and refractory boils might yield to small doses of insulin.

Dr. FRANKIS T. EVANS related a series of blood-sugar tests he had made some years ago during surgical anæsthesia. In the case of chloroform alone the sugar did not rise so much as when ether alone was given; with chloroform the rise was from 100 to about 125; while with pure ether it was to 180 and 200. The highest was after gas-and-ether. After gas-and-oxygen the rise was not more than to 150. He was not aware that his patients were asphyxiated, but the gas-ether sequence was suggestive of that.

Sir JOHN BROADBENT spoke of patients in whom diabetes started late in life. Some of them could get on well as long as they did not produce much sugar and were careful about their diet. Others asked for a more liberal diet, supplemented by the use of insulin. The higher scale of mortality in women patients than in men was, he thought, due to difficulty in carrying out a fixed régime. A woman diabetic might take time off and accept invitations to tea. In later life some diabetics had kidney trouble which no amount of insulin would relieve. Many went on for years with intermittent diabetes and albuminuria.

Sir WILLIAM WILLCOX said those with experience of hospital work knew elderly people classed as diabetics who did not die of diabetes but of arterio-sclerotic changes associated with glycosuria in old age. Often, too, there was some chronic interstitial nephritis. In 1921 he had pointed out the effect which toxic conditions had on the course of insulin administration. If a diabetic patient contracted influenza or pneumonia the dose of insulin needed to be greatly increased. That applied also to focal infections. One of the abuses in the employment of insulin was the treatment of glycosuria without thorough investigation. In some patients with focal abscesses there might be a sudden development of glycosuria; when the sepsis cleared up there was no longer need for insulin.

Dr. LAWRENCE, in reply, said that if elderly diabetics could stand 100 grammes of carbohydrate they did not require insulin; those on 50 grammes were not in such good health as they should be. The question was best answered by a consideration of the amount of sugar and acetone in the urine. If on 50 grammes a patient was reasonably well, if he did not need to live a life of full activity, and if no acetone was detected, there was no need to insist on insulin. If acetone was present it would be well to raise the value of the diet and give small doses of insulin. He agreed that women diabetics were more difficult to treat than

were men; a woman of 50 to 60 years as a rule exercised less control over diet than did a man of the same age. He did not see much complicating kidney trouble. Though traces of sugar and albumin were often found in these old cases of diabetes, they went on comfortably for years. If the amount of sugar in the urine was not controlled such cases were likely to develop retinitis and widespread capillary degeneration, showing itself in the leakage of albumin from the kidney and possibly gangrene of the feet.

ROYAL SOCIETY OF MEDICINE

SECTION OF TROPICAL DISEASES AND PARASITOLOGY

Dr. C. MAGARINOS TORRES (Rio de Janeiro) delivered the Lloyd Roberts lecture at a meeting of this section held on Nov. 25th, with Dr. PHILIP MANSON-BAHR, the president, in the chair. His subject was

The Pathology of Alastrim and the Variola-Alastrim Problem

The name "alastrim," he said, was a Brazilian term meaning something which spread from place to place, and the disease was very widespread. He described a small epidemic among soldiers in Rio de Janeiro. The clinical manifestations had been typical: the usual appearances of small-pox but without toxæmia and prostration. The suppurative stage of the eruption was attained sooner than in small-pox, but the smell was never offensive. There had been one death, from acute heart failure. There had been no subsequent pitting or scarring, but only a deeply pigmented spot. A study had been made of the inclusion bodies of alastrim and variola in the rhesus monkey. Extreme variations had been noticed. When small and discrete, these bodies looked very similar in both viruses, but in the later stages definite although slight differences could be identified. Alastrim bodies were usually single, even in advanced stages, and were about the size of the epithelial nucleus. Variola bodies were usually found in large numbers, leading to extensive vacuolation of the epithelial cytoplasm. Alastrim bodies regularly stained a deep blue when small, turning to greyish-blue when they attained the size of a nucleus, but small-pox bodies stained very capriciously, sometimes being eosinophil though usually blue. Their most characteristic feature was the presence within one cell of some pink ones and some blue ones. In only one instance had such polychromatophilia been found in alastrim inclusions. Moreover, intranuclear inclusion bodies had not been found in skin lesions induced by variola, although they had been found occasionally in alastrim lesions, revealing a peculiar retiform appearance. With Unna's hæmalum and safranin method, alastrim bodies were stained faintly blue-violet, but vaccine bodies, like the nucleoli, were strongly safranophilic and deep red.

The elementary bodies described by Paschen were now generally regarded as real micro-organisms and the ætiological agent of variola-vaccinia. Large numbers of these bodies had been demonstrated in smears from human and monkey cases of alastrim skin lesions. These were indistinguishable from those found in small-pox, but the cytoplasmic and intranuclear inclusion bodies were clearly distinguishable, in the human as well as in the monkey patient. Cytoplasmic inclusions in human alastrim were often

juxtannuclear, the nucleus preserving a normal outline. Sometimes the cytoplasm was normal, sometimes there was a halo of refraction around the inclusion. Unna's method revealed them as non-safraninophilic; and they showed basophilic properties with hæmatoxylin and eosin. Intranuclear inclusions were less typical than in other diseases and presented a peculiar retiform appearance with typical margination of the basichromatin. In human small-pox, cytoplasmic and intranuclear inclusions had been found in large numbers in epithelial cells. The two types did not occur within the same cell. Cytoplasmic inclusions manifested deep staining with safranin, prevalent acidophilia, and multiplicity of inclusions of different shapes and sizes within the same cell. There were three types of intranuclear inclusion in human small-pox: an irregular mass or masses of acidophilic granules within a relatively normal nucleus; a homogeneous or partially chromophobic inclusion taking up the entire nucleoplasm; and one or more clear ovoid or spherical acidophilic bodies with very small multiple chromophobic areas, the linin reticulum having disappeared.

Alastrim had been diagnosed by inoculation of the cornea of the rabbit. The virus was less resistant to desiccation than that of small-pox, and so Paul's original technique for its collection was inadvisable. A positive reaction in the cornea was manifested by tiny greyish-yellow prominences or uniform thickening along some of the incisions. The features described by Paul in testing for small-pox were not found. Microscopically there was a lack of arrangement and proliferation in the anterior corneal epithelium, and sometimes interstitial oedema, but very little surface bulging. Cytoplasmic inclusion bodies were found in every positive case. Paul's test in alastrim was therefore weak, inconstant, and easily distinguishable from the same test in small-pox.

In some respects alastrim held an intermediate position between small-pox and chicken-pox. Epithelial cell formation was common, as in varicella, and balloon degeneration of the cells of all the layers of the stratum germinativum was found. In small-pox the balloon degeneration was confined to the bottom and sides of the vesicle. A pathological process was constantly found in the corium in alastrim, as in chicken-pox, but the alastrim vesicle occupied the top only of the Malpighian layer, as in small-pox. In varicella intranuclear inclusion bodies only—not cytoplasmic—had been demonstrated.

The development of the alastrim skin lesion had been watched carefully. It began with proliferation of the epidermis upward and downward, but with few mitotic figures. A surprising number of Malpighian cells contained cytoplasmic inclusion bodies at this stage. Their nuclei were distinctly swollen and small vacuoles appeared at the outer layer of the cytoplasm. In the lower layers, marked inflammation was seen in the papillary bodies, which were narrowed and obliterated. The blood-vessels were surrounded by numerous polymorphonuclear leucocytes and epithelial cells. The superficial layer of thickened epidermis showed extensive necrotic changes before vesicle formation was recognisable. The vesicle, when formed, occupied the top of the hypertrophied Malpighian layer. Balloon and reticular degeneration were seen, as in small-pox, but in alastrim the former was scanty and was found in the upper layers of the stratum germinativum as well. The details of reticular degeneration were identical with those described in variola, but in alastrim it was striking to observe the normal structure of the cells making up the bottom and sides of the vesicle.

The most typical feature, however, was the presence of giant epithelial cells like those of herpes zoster and varicella. This stage gradually passed to that of pustulation, the superficial part of the vesicle being filled with fluid and the lowest part packed with polymorphonuclear leucocytes. Malpighian cells underwent extensive necrosis, and the bottom of the pustule was composed only of leucocytes, fibrin, and connective tissue, but the destruction seemed to be less wide than in small-pox. Inflammatory changes in the cutis vera were marked. Intranuclear inclusions were exceedingly rare in the human material. It was thus possible to diagnose alastrim from small-pox by the histological changes present.

In the subsequent discussion Dr. J. D. ROLLESTON said that the lecture emphasised the scarcity of present information on the pathology of alastrim, and expressed a heterodox view which would give the orthodox furiously to think.—Dr. RUSSELL AMES recalled his serological work on mild small-pox in England, and said it had given no cause for differentiating small-pox from the mild English form. Work similar to that of Prof. Torres should be done on the mild form in this and other countries.—Dr. R. P. GARROW considered that alastrim was not now a tropical disease at all. The distinction made by the lecturer corresponded to the views which some English workers had formed on clinical, epidemiological, statistical, and immunological grounds.—Dr. E. W. GOODALL said that he had distinguished alastrim from small-pox and chicken-pox on clinical grounds. The immunological work had, however, persuaded him that alastrim was merely a variety of small-pox. The work of Prof. Torres made diagnosis easier but had not convinced him that it was a distinct disease. A crucial test would be whether, in an outbreak of the old classical small-pox, one disease protected from the other.

SECTION OF MEDICINE

At a meeting of this section held on Nov. 26th the chair was taken by Sir CHARLTON BRISCOE, the president, and a discussion on the

Causes and Treatment of Obesity

was opened by Sir EDMUND SPRIGGS. The cause, he said, was that the energy in the food had habitually been greater than that spent by the body. Reasonable plumpness might be good, but too much fat did harm, restricting healthy movement, infiltrating important tissues, and making a man or woman less capable. The importance of endogenous factors, lessening expenditure, was obvious; exogenous obesity was due to eating more than others of similar build—increasing income. A low sugar-tolerance curve indicated a considerable endogenous factor. The basal metabolic rate was raised in obesity more often than might be expected. The body was capable of dealing with a wide variation of intake while keeping weight constant. It changed gear silently, and a diet far below that of normal maintenance was necessary to bring about rapid loss of weight. Once a start was made in either direction there was a tendency to continue in the same direction.

The treatment fell into two parts: reduction of food and increase in output of energy. Both measures were carried out simultaneously. Income could be reduced by fasting: the man fasted but his tissues did not. A rapid reduction produced by fasting was not likely to be permanent. It was better to supply the basal needs with a reduction of calories. The basis of the diet was meat and vegetables, but

almost any food could be taken in small quantities. The patient must be made to realise that the total caloric value was what counted. No fixed or published diet could be the most suitable for any individual; the régime must be varied continually. (Sir Edmund Spriggs showed tables illustrating variety in diets of various caloric values.) On a milk diet people were apt to complain of feeling weak, but 4 oz. every two hours eight times a day gave a fairly balanced diet of 600-700 calories. An orange day a week was useful, especially if appetite failed; six large oranges gave 370 calories. Single fruit cures continued for long, however, were starvation cures. Water could be taken freely if food was weighed, but drinking during the meal led to greater consumption of food. Beer, spirits, and wine had considerable food value and must be calculated in a diet. For malaise or headache, a glucose lozenge four times a day between meals was useful.

Most of the energy output went in keeping people warm, and the more nearly spherical a figure was the smaller was the surface available for heat loss compared with the weight. Fat people needed less food than thin. The energy expenditure for muscular work was not great compared with the intake, but exercise was nevertheless a valuable means of losing weight, especially if combined with loss of heat from sweating. The loss from electric light or Turkish baths was apt to be temporary because it consisted largely of water, which was replaced at the next drink. Riding was good but had to be strenuous to be compared with walking fast in cool air. Massage and the Bergonié chair improved the local circulation in people unable to take exercise. Hunger on a reducing diet only lasted a few days and was not enough to make the patient unhappy. Headache and malaise were unusual and were relieved by carbohydrate or a meal. A full reduction régime was not compatible with a busy life, and harm might come—particularly through loss of resistance to infections—to an energetic woman trying to fulfil her engagements on a low diet. Thyroid was the most useful drug. Most people felt better at once, and lost health might be restored. For a successful rapid reduction special cooking, variety of food, individual taste, and medical supervision were needed; it should be for the patient a whole-time task. For a slow reduction there was no need for fuss or special cooking; the problem was one of omission of unsuitable foods, especially restriction of carbohydrate.

Dr. H. GARDINER-HILL said that the obese patient could not fail to lose weight if he starved, but he had great difficulty in controlling his weight on what seemed an average diet. If he took even a little food, he at once stored it and put on weight. In some cases obesity could be traced to alcohol or residence in a hot climate—perhaps owing to a lowered setting of the heat-regulating apparatus. A hereditary tendency was found in 70-75 per cent. Many patients showed a minor degree of endocrinopathy. The regulatory mechanism depended on appetite and impulse to activity and in the obese it was disturbed, but there was also an extraordinary avidity of the tissues for food, salt, and water, without which abnormalities of the regulatory mechanism would perhaps be unable to cause obesity. This excessive storage mechanism was probably due to abnormality on the anabolic side. Obesity was not invariable in any of the endocrinopathies in which it often appeared—except perhaps in Cushing's syndrome. The basal metabolism and sugar tolerance might be low, normal, or high. Insulin might play a part in the storage mechanism; diabetics, and especially children, could

be fattened on insulin with high carbohydrate diet. Obesity was associated with water-salt retention, which accompanied thyroid deficiency, while the opposite condition was found in Addison's disease. Storage powers undoubtedly depended on endocrine influences, but little was known of their mechanism.

Dr. DONALD HUNTER said that the clinical picture of basophilism had been shown at autopsy in certain cases to correspond to that of carcinoma of the thymus or adrenal cortex, the pituitary in such cases being macroscopically normal. It had been shown this year by Crooke that the only change common to all such cases was the hyaline change in the basophil cells. In the last nine years 2447 cases had been referred to the dietetic department of the London Hospital for gross overweight. Only 682 had attended long enough to get any benefit; 92 per cent. had been women and 262 had had simple obesity without illness. Of those who came regularly, 93 per cent. were obedient and lost weight, some 12 tons of fat having been removed from East End ladies in the nine years. The first part of the problem was to convince the patient that weight could be reduced by dietetic means only, without drugs and without malaise or interference with normal life. The loss aimed at should not exceed 2 lb. a week, and the average diet had 1100-1200 calories. The human body obeyed the law of conservation of energy; whatever the factors producing obesity, any individual on an inadequate diet would lose weight. It was important to realise that the dietetic treatment of obesity was a practical proposition; the only real difficulty was psychological.

Dr. E. P. POULTON described a case where a bed-ridden patient had been reduced from 13 to 10 stone and had maintained this weight for a year on a diet of 600 calories. It was possible to live on one or two grammes of nitrogen a day, but for practical purposes it was difficult to get protein below 30 g. a day; this was a reasonable amount to live on. Protein, he thought, was used as food, and had no specific dynamic action.

Dr. S. LEVY SIMPSON wished he could regard obesity as so simple a question. He thought there was no such thing as simple exogenous obesity—i.e., one with no underlying endocrine factor. It was like saying that in diabetes insipidus a patient passed lots of urine because he drank lots of water. Pathological appetite was a very real entity; pituitary obese types often said that their hunger for sweet things amounted to craving at times—often just before menstruation. Somnolence was associated with the less gross forms of obesity, and there might be a tendency for patients to spare themselves short of actual sleep. Physically the law of conservation of energy must hold, but there was more in the problem than that. Two people eating the same amount and doing the same work might be of very different weight, and this fact required explanation, as did the familial and racial features.

Dr. LEONARD FINDLAY said that his experience with East End children had led him to diametrically opposite opinions from those of Dr. Hunter. People varied tremendously in their response, and excessive diet was not the main factor in obesity. Everyone every day took more nourishment than he required, but many did not get fat. The reason was something to do with metabolism. Children on diet get irritable and usually it was better to leave them alone if they were otherwise well. A study of the creatinine output had shown that this was proportional to the increase in weight in most cases; it was bound to influence the basal metabolic rate.

Dr. F. PARKES WEBER thought that the difficulty arose when obese people wanted to eat more; there came the psychological problems and crux of the whole matter. It was almost against human nature, for fat people to submit to relative starvation. The way of the future, he thought, was some method of reducing appetite without doing harm or diminishing the joy of life.

Dr. H. W. HALES viewed obesity as a symptom of oxidation deficiency produced by tissue and intestinal poisons. Prolonged fasting cleared up a number of pathological conditions. After long fasting voracious appetite did not return, and patients did not regain weight. The integrity of the skin, liver, and intestinal mucosa were essential for fat oxidation. Treatment should include a study of that put into and excreted from the alimentary tract. There were certain toxic principles in food, especially meat, of which avenin was an important example; these toxic bodies became fixed in the tissues and could only be eliminated by very low diets. Hunger was analogous to the withdrawal symptoms felt by drug addicts; food was in many ways a dangerous drug. Colonic detoxication was essential, and pyretic baths were of the greatest importance.

Sir EDMUND SPRIGGS and Dr. HUNTER replied.

ROYAL ACADEMY OF MEDICINE IN IRELAND

A MEETING of the section of medicine was held on Nov. 8th, with Dr. V. M. SYNGE, the president, in the chair.

Münchmeyer's Disease

Dr. R. W. SHAW showed a patient who had been previously brought before the section, in March, 1934, with a tentative diagnosis of pseudohypertrophic muscular dystrophy.

She was now 8 years old. In September, 1934, she developed a severe cold and was feverish for a week. In November, for the first time, Dr. Shaw noticed numerous small soft nodules in the flexor aspects of the elbows and knees and in the tendons of the biceps and hamstrings, and also in the tendons of the pectorals. Otherwise the child was in fair health, but she was very small, her height being 3 ft. 6 in., and her weight 3 st. 3 lb.

In February of this year she developed diphtheria and scarlatina, and was sent to Cork-street Fever Hospital where she remained till May. The long period in bed had greatly weakened her power of locomotion, and about a week after leaving hospital she was brought to Dr. Shaw with what he at first took to be an abscess on the inner aspect of the left knee. There was considerable inflammation and induration of the area. On further examination the abscess was found to be one of the previously noted nodules which had apparently broken down and was discharging a cheesy material. By the end of May this condition had almost healed but the nodules were much harder and more numerous. On May 29th, after a minor fall, the child sustained a fracture of the right femur just above the condyle, and was admitted to hospital where she remained until early in August. At first there was considerable difficulty in walking. At present she was able to walk fairly well, but had limited movements of limbs. She had two discharging sinuses in the left knee. Her face was expressionless, and there were red markings on various parts of her body. Her height was now 3 ft. 6 in. and her weight 2 st. 11 lb. She was very intelligent. She ate and slept well. Nodules could be seen and felt. There were no knee-jerks. The urine was normal.

Dr. Shaw thought that the case was one of Münchmeyer's disease (diffuse progressive ossifying poliomyelitis), although the patient presented but few

of the classical features. Only about 200 cases had been published and the aetiology of the disease was obscure, but it did not seem to have any connexion with an upset of calcium metabolism. The onset was usually before the age of five; it might develop in the course of some infectious disease, or calcification and ossification might occur in small hæmatomata caused by injury—e.g., by a hypodermic needle. In the present case it developed after dysentery, and the first swelling was noticed after a hæmatoma. The effects produced might be of two kinds: (1) total petrification of the muscles which preserved their form, and (2) irregular ossification producing osteogenic exostoses; often but not always, the skin over the osteomas was normal. The disease progressed only very slowly to the stage described by Virchow as "l'homme pétrifié." The condition was chronic, but it progressed in bursts followed by long periods of inactivity. Respiratory embarrassment and difficulty in deglutition might eventually lead to intercurrent infection.

Dr. DOROTHY PRICE thought there was now no doubt about the diagnosis of Münchmeyer's disease in this case. The speed with which the condition had come on was very remarkable. All the calcium in the body appeared to be going into the muscles. The expectation of life in these cases seemed to be long.—Dr. W. G. HARVEY said it appeared to him that the great majority of the tumours were very superficial, and asked if Dr. Shaw had located any of them, and, if so, how deep they were.—Dr. E. T. FREEMAN asked what the nodules were composed of.—Dr. E. HARVEY asked if any investigations had been done on the parathyroids in this case.—Dr. T. O. GRAHAM referred to the case of a "stone man" who had been in Sir Patrick Dun's Hospital when he was a student. He had been kept in hospital for two years, and after that went to a hospital in Belfast. A diagnosis of myositis ossificans had been made, but there were no stony deposits in the skin.—Dr. C. J. MURPHY said that myositis ossificans was traumatic in origin. Dr. Shaw's case had come to light after trauma. He wondered if there was any relation between trauma and the origin of Münchmeyer's disease.

Dr. Shaw, in replying, said that the tumours in the gluteal muscles were pretty deeply in. He had not as yet examined the nodules chemically. No investigation had been made into the function of the parathyroids. He did not think that trauma had played any part in the appearance of the nodules. The child had had an accident, but before the accident he had noticed the nodules.

Pellagra

Dr. E. T. FREEMAN showed a case of pellagra with much pigmentation on the face. The condition got worse in the summer, and almost faded away in the winter. The patient had been given a small dose of ultra-violet light to see if she was sensitive, and her skin had reacted strongly. The blood count was normal, and the urine was normal. She complained of a skin rash, bodily fatigue, pains, and a feeling of constant tiredness. She had not eaten maize since she was a child, and then had only taken it in very small quantities. For the last five years she had had quite an ordinary diet containing plenty of vitamins.

The PRESIDENT said that before 1927 only two cases of the disease had been reported in Ireland, and Dr. M. DRUMMOND said that in the last ten years he had seen only four cases.

REVIEWS AND NOTICES OF BOOKS

Sir Donald MacAlister of Tarbert

By His Wife. London: Macmillan and Co., Ltd. 1935. Pp. 392. 12s. 6d.

Sir Donald MacAlister's extraordinarily brilliant academic career, and his success as administrator in two great and completely different posts, is set out here in sober language by his wife. It is a record of performances and happenings, and although there is no criticism of the subject of the biography—which could not possibly be expected—still the book is neither a bare record of successes nor an adulatory stream. In presenting the portrait of a great personality opportunity has been taken to shed considerable light on important problems in education—general and medical.

Donald MacAlister was the descendant of an old and erst wealthy Scottish family, the MacAlisters of Tarbert; their property being eaten up by a contiguous duke, the head of the family some hundred years or more ago was landless and poor, a crofter and fisherman. He had a large family and his eldest son, born in a farm at Tarbert, was a bookish boy and set out to seek his fortune in Glasgow. He made good as manager of more than one well-known publishing firm and went to Liverpool in that capacity, where his eldest son, eventually to become Sir Donald MacAlister of Tarbert, began his serious education. This culminated, after a series of prizes, bursaries, and exhibitions which made the scholar self-supporting from childhood, in the senior wranglership at Cambridge in 1877. He then pursued an original ideal by qualifying in medicine; this he did from St. Bartholomew's Hospital medical school and returned to Cambridge to become fellow and tutor of his old college, St. John's, assistant to Sir George Paget, the regius professor of physic, and physician to Addenbrooke's. Early elected to the fellowship of the Royal College of Physicians of London, he made his scientific mark by an excellent translation of Ziegler's *Pathological Anatomy*, the fruit of post-graduate work at Leipzig under Ludwig, and by his Goulstonian and Croonian lectures. His great public career began when in 1889 he succeeded the famous Humphry as representative of Cambridge University on the General Medical Council.

An appendix to the biography dealing with MacAlister's work on the G.M.C. has been written by his successor in the presidential chair, Sir Norman Walker. Sir Norman testifies, with simplicity and detail, to what all men know, that under MacAlister's long guidance the Council grew steadily in influence; its finances became stable and its great function, that of standardising medical training and maintaining due ethical principles, both in the public interest, was made apparent by his actions no less than by his careful and practical half-yearly addresses.

In 1907 MacAlister was appointed principal of the University of Glasgow, and here again the biographer has looked outside for proof of his varied accomplishment, for Sir Robert Rait, the present principal, has supplied the story in a full appendix. MacAlister's learning, his devotion to duty, and sympathetic appreciation of other men's difficulties alike made him a model principal and gained for him the exceptional honour of being appointed chancellor of his university.

From this record there emerges the picture of a remarkably gifted man, and it is not surprising

that at his death, some two years ago, the writers of the obituary notices should have, almost with one accord, reflected that whatever professional career he had adopted he would inevitably have become its head. Scholar, linguist, organiser, and man of affairs, along each of these lines he was equally pre-eminent. Hence it is a charming feature of Lady MacAlister's account that we should learn from her the religious simplicity of his private life. Men with such intellectual attributes as MacAlister are apt to be a little terrible to their fellows, especially when their qualities are hall-marked by an almost incredible number of State and academic distinctions; MacAlister's learning and force of character, we can see, never made him other than kind, sympathetic, and helpful. For the intimate picture of him which Lady MacAlister is able to draw, all readers will be grateful.

Hormone des Ovariums und des Hypophysenvorderlappens

Second enlarged edition. By Dr. BERNHARD ZONDEK, Professor an der Hebräischen Universität, Jerusalem; Direktor der Gynäkologisch-Obstetrischen Klinik des Rothschild-Hadassah-Hospitals, Jerusalem. Vienna: Julius Springer. 1935. Pp. 638. R.M.58.

THIS work on the hormones of the ovary and of the anterior lobe of the pituitary gland has been considerably enlarged and brought up to date, and is now so elaborate that it almost defies the reviewer. It belongs to that type of German work which includes a reference to practically every paper that has been written on the subject, with the result that though it is of the utmost value to research workers, the general student will find it far too complicated and lacking in critical judgment. Research workers will find one section disappointing—the chemical section. The reference to the chemistry of the sex hormones is too brief to be of much use, and many important papers on prolactin are ignored. In a work of this size the reader is entitled to expect either an adequate summary of the chemical aspect of the problem, or at least a complete series of references to the more important papers.

Radium Treatment

Of Skin Diseases, New Growths, Diseases of the Eyes and Tonsils. By FRANCIS H. WILLIAMS, M.D. Harv., Senior Physician, Boston City Hospital. Boston, Mass.: The Stratford Company. 1935. Pp. 118. \$2.00.

THIS little book gives an interesting account of 30 years' experience in the use of radium, and particularly of the early efforts to find a scientific method of measuring the dose absorbed in the tissues. A fluorometer is described together with the author's arrangement for making his standard comparisons with rays which have passed through varying thicknesses of water before they reach the fluorescent screen, a method which appears to be sound when mixed beta and gamma radiation from lightly screened preparations is to be measured.

Three main types of lesion are dealt with: lesions of the skin, of the eye, and of the tonsil. The cases of cancer of the skin are similar to those usually described but the interest lies in the fact that 17 cases

of rodent ulcer were reported in 1908 and 181 cases of skin cancer, of which 154 healed in 1913, at a time when the therapeutic uses of radium were little understood. For the eye ingenious instruments are described, and the author makes some surprising claims for his methods. Corneal opacities due to ulcer are said to clear up, anterior capsular cataract to disappear, and in one case it is claimed that retinitis pigmentosa was arrested. For infected tonsils treatment with relatively large quantities of radium, 55 mg. filtered with 0.6 mm. of aluminium for ten minutes, applied direct to the tonsil, is said to be most effective. It seems quite possible that this direct application may be helpful in causing shrinkage of the inflamed mucous membrane and so allowing the escape of the retained septic secretions; but the claim that the tonsil is favourably affected by radium held over the skin of the neck in the region of the tonsil for 5 to 15 minutes will be regarded with scepticism by most radiologists.

Introduction to Vertebrate Embryology

Third edition. By WALDO SHUMWAY, Ph.D., Professor of Zoology, University of Illinois. New York: John Wiley and Sons; London: Chapman and Hall Ltd. 1935. Pp. 390. 20s.

Most text-books of vertebrate embryology deal exclusively with morphology. The existence of experimental embryology is rarely mentioned except to the advanced student. The time has now come, however, when a reasonable account can be given, even in text-books, of the forces at work during development. Prof. Shumway deserves congratulation on the way in which he has combined the two aspects of the subject in this third edition of his work. Two admirable chapters are provided on the theory of the gene and on experimental embryology; these should give the student a good general idea of what is known of the action of hereditary and environmental factors upon the course of development. The second half of the book deals in a clear and concise manner with the elements of organogeny, the anatomy of some embryos, and with embryological technique. Useful bibliographies are supplied at the end of each chapter.

How Animals Develop

By C. H. WADDINGTON, M.A., Fellow of Christ's College, Cambridge. London: George Allen and Unwin Ltd. 1935. Pp. 128. 3s. 6d.

This is the first attempt that has been made in the English language to give a popular but comprehensive survey of the recently developed science of experimental embryology. The investigator is here faced with fundamental problems, and it is reasonable to expect that research in this field will eventually lead to results of extreme importance to the biological sciences in general. Mr. Waddington's book makes very good reading and gives a clear, though necessarily simplified, account of his subject. He leads us in a logical manner through the necessary morphological introduction to the fascinating experimental work of Spemann, the Nobel prize winner, and his followers on the "organiser." Mention is also made of the influence of hormones, of function, and of other factors upon the course of development. We are left confronted with the as yet completely unsolved problem of the individuation field or the causes underlying

the "pattern" of an organism. For the student this book will provide a stimulating introduction. It is more difficult to say whether the intelligent layman, to whom the book is also addressed, could form a sufficiently clear picture of the normal course of development to enable him to grasp the full significance of these problems. Failure in this respect could hardly be laid at the door of the author, for developmental anatomy is extraordinarily difficult to visualise without some practical acquaintance with embryos.

1934 Year Books

1. *General Therapeutics*. Edited by BERNARD FANTUS, M.S., M.D., Professor of Materia Medica, Pharmacology, and Therapeutics, University of Illinois College of Medicine. Chicago: The Year Book Publishers, Inc.; London: H. K. Lewis and Co., Ltd. 1935. Pp. 462. 9s. 6d.

2. *Neurology, Psychiatry, and Endocrinology*. Edited by HANS H. REESE, M.D. (Neurology), Professor of Neurology and Psychiatry, University of Wisconsin Medical School; HARRY A. PASKIND, M.D. (Psychiatry), Assistant Professor of Nervous and Mental Diseases, Northwestern University Medical School; and ELMER L. SEVRINGHAUS, M.D. (Endocrinology), Associate Professor of Medicine, University of Wisconsin Medical School. Same publishers. 1935. Pp. 782. 12s. 6d.

1. These year books are, as is now well known, small, compact, and well printed. This one contains several hundred summaries of newly described methods of treatment, covering general medicine, minor surgery, anaesthesia, toxicology, and physical (including radiation) therapy. They are attractively written, and sometimes illustrated, and an occasional editorial comment is supplied in modest small print. American literature provides the source for the great majority of the articles; English and German for most of the rest. The editor makes no claim to comprehensiveness, but for all whose fields it touches the book is worth looking through. It is sure to yield something of interest or of value, and to yield it quickly.

2. This member of the series was edited until recently by Dr. Peter Bassoe. Obligated for reasons of health to give up the task, he has cast his mantle, in triplicate, on new editors, and the book now has three independent sections. It is packed full of meat, partly predigested. The papers abstracted include surveys and short reviews as well as original contributions in the strict sense, and the abstracts, usually clear and well written, are full enough to let the reader know whether or not he wishes to study the papers themselves. Prof. Sevringhaus introduces his section with a twelve-page outline of "systematic endocrinology"—a brief undocumented statement of current ideas of the inter-relationships of the glands—and confines his abstracts to papers on clinical endocrinology; even so, they occupy one-third of the volume. Guides are almost indispensable in the maze of medical literature; this is a competent one.

NOTTINGHAM GENERAL HOSPITAL.—The foundation-stone of the new pay-bed wing of this hospital was laid on Nov. 13th. The sum of £60,000 necessary to complete the project is assured and the 23 wards are being equipped and furnished by Sir Julien Cahn. The hospital will be opened free of debt and will be self-sustaining.

NEW INVENTIONS

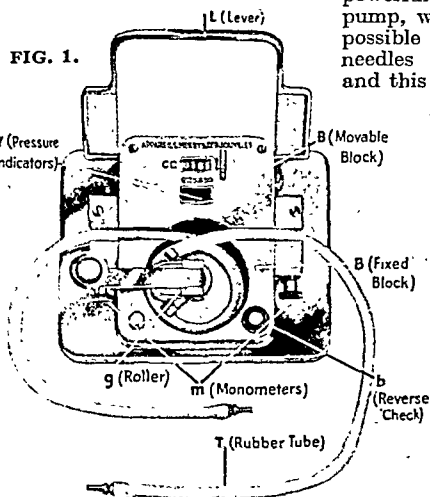
HENRY AND JOUVELET'S PUMP
FOR BLOOD TRANSFUSION AND OTHER PURPOSES

We have had an opportunity of testing this ingenious machine which is already in extensive use on the Continent. In principle it consists of a metal cup in which a vertical roller rotates about a central spindle (see Fig. 1). A loop of sterile rubber tube, which is to convey air, blood, or other fluid, is inserted between the roller and the sides of the cup, and when the central spindle is turned the roller compresses the tube, squeezing its contents along at a given speed. Two models are made, worked respectively by hand (Fig. 1) and by an electric motor (Fig. 2). A cyclometer denotes the amount of fluid delivered, and this amount can be varied from 0.15 to 300 c.cm. per minute by altering the speed of rotation. Reverse and forward movements are provided so that suction or propulsion can be obtained. Pressure gauges give warning of any obstruction to the flow in the tube.

Although the machine was primarily designed for direct transfusion (which can be performed in one operation), we have used it successfully for indirect transfusion of blood or saline, continuous drip transfusions of these fluids, infiltration of local anaesthesia, and other purposes. The method of using is as follows.

1. *Transfusion.*—All the preparation necessary is to sterilise a flask or jug, two fine needles, and the two pieces of rubber tubing provided. This ease of preparation is very valuable when working in a private house or nursing-home. The tube is fitted into the machine and a fine needle attached to one end. Citrate solution (3.8 per cent.) is sucked through the needle and tube and collected in the sterile flask into which the other end of the tube dips. The needle is then inserted into the donor's vein and the required amount of blood withdrawn, to be mixed with the citrate by shaking. (Owing to the very

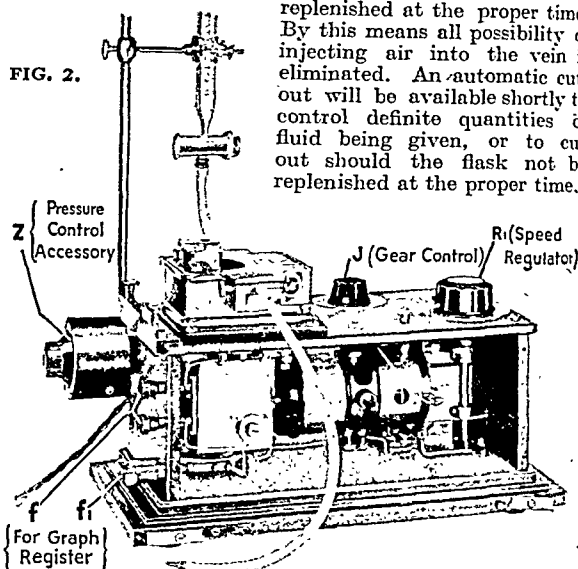
powerful action of the pump, we have found it possible to use quite fine needles for the donors, and this is much appreciated by them.) The second tube is now fitted to the machine and the blood pumped from the flask into the patient's vein at any desired rate. Infusion of saline and other fluids is very easily carried out by a similar technique, the fluid being contained in a flask clamped to an upright on the machine.



Essential parts of the hand-worked pump.

2. *Continuous drip transfusion or infusion.*—We have found the motor-driven model to possess very definite advantages over the gravity methods commonly used for this procedure. The flow is maintained without intermission for as long as desired, and even when the fluid is dripping slowly from the needle it has a considerable pressure behind it, and this appears to prevent the clotting which is the main difficulty of continuous intravenous injections. Our method is to place the citrated blood or the saline in a flask surrounded by a Gamgee jacket, and to pump it into the patient by means of a glass cannula tied into the saphenous or other vein.

The blood is continuously mixed by passing through it bubbles of filtered oxygen, as suggested by H. L. Marriott and A. Kekwick (THE LANCET, 1935, i., 977). We have thought it advisable to add a float device which automatically cuts out the motor should the flask not be replenished at the proper time. By this means all possibility of injecting air into the vein is eliminated. An automatic cut-out will be available shortly to control definite quantities of fluid being given, or to cut out should the flask not be replenished at the proper time.



The electric pump. Fluid is flowing from a burette and is being pumped through the rubber tube.

3. *Infiltration of local anaesthetics.*—We have used both the motor and hand models for infiltrating the abdominal wall and the neck. The advantage is that the surgeon can create a wide and deep field of anaesthesia with a solution delivered at a regulated pressure and rate of flow.

The apparatus is capable of many other uses, three of which are aspiration of effusions, establishment of artificial pneumothorax, and suction during operations.

Our short experience, based on 22 cases, has shown us that the apparatus possesses certain definite advantages in transfusion. The fact that the pump, whether driven by hand or motor, does not require sterilisation rules out that complication associated with subjection of machinery to extremes of temperature or contact with antiseptic solutions. The pump action being reversible permits anticoagulant fluid and donor's blood to be drawn through the tube into the collecting flask, and then propelled into the recipient through an airtight system. To make sure that the recipient's vein has been entered we insert a glass connexion into the tube close to the needle and fill the tube with anticoagulant fluid. As soon as the vein has been punctured the pump is put in reverse and blood is seen in the glass connexion; all is now well and the forward speed is applied. Collection of the donor's blood by suction leads to some frothing in the flask. Using fine needles (Record Serum No. 1) and a tourniquet applied to the arm of the donor at 80 mm. Hg we have had no trouble with clotting, nor collapse of the vein. Blood can be injected into the recipient at 40 c.cm. per minute without giving rise to pressure changes. In continuous transfusion we have been able to avoid venous thrombosis, but the noise of the motor is an objection, which the makers are taking steps to overcome. In our experience the machine has proved entirely reliable. It is obtainable in this country through Messrs. Jourdan and Black, 24, Pall Mall, S.W.1.

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THE LANCET

LONDON: SATURDAY, NOVEMBER 30, 1935

THE EXTINCTION OF VENEREAL DISEASES

At the International Congress of Dermatology and Syphilology held this autumn in Budapest it was "accepted as a fact that syphilis and gonorrhoea could be made extinct throughout the world within a single year if all who suffer from them would have themselves fully treated." We are quoting the actual words¹ of our Budapest correspondent, who went on to say that as a corollary to this principle the Congress "proposed the application of legal penalties and the State control of treatment, together with the regulation of prostitution." Now there is no doubt that the organisms of syphilis and gonorrhoea are both easily destroyed under the ordinary conditions of exposure to heat, dryness, light, and air; and it is only as the result of extreme adaptation to the special environment in which they live that they have managed to exist and flourish for so long. There is also no doubt that in the arsenicals we have a very potent weapon at hand for making patients non-contagious in the early and communicable stages of syphilis; and, although unfortunately there is no similar weapon at present available for the treatment of gonorrhoea, yet we believe that with reasonable care we can guarantee a clinical, bacteriological, and serological cure in all but a minute proportion of cases inside a year. It therefore seems not unreasonable to suppose that, if everyone infected were promptly and adequately treated, these age-old curses of mankind would speedily be eradicated. Theoretically this is true in a world governed by logic and reason; but unfortunately we live in one that is ruled by emotion, love and hatred, illogical likes and dislikes; and the moment we are up against any of the problems associated with sex this becomes manifest to the most casual observer. Practically then the administrative, technical, and social difficulties in the way of carrying out anything like a world-wide campaign of diagnosis, notification, treatment, and penalties for neglect of treatment of venereal disease are so great that we may consider the pronouncement of the Congress in the light of a dramatic gesture intended to draw attention to the fact that, given proper facilities, we have the weapons in our hands to control and finally eradicate these diseases as soon as the conscience of the nations is sufficiently awake to allow us to do so without let or hindrance.

None the less, it is worth while to pause, take stock, and consider what suggestions the Congress has made, for in this way we may clarify our own

ideas of what is possible, and what history tells us is repugnant to the British mind. Let us first consider the question of the regulation of prostitution. The continental mind has always been favourable to some kind of police control of this evil, generally taking the form of the registration, segregation, and periodic medical examination of all women who habitually (or even occasionally) sell their bodies for gain. As a necessary consequence such women if found diseased are sent into hospital, whether they will or no, and are kept there until pronounced cured. Paris, Berlin, and Vienna carry on systems intended thus to control prostitution, and so incidentally minimise the spread of venereal disease. It is a comment on the success of these endeavours that it is precisely to these places that students of venereology flock because of the abundance of the material. In England, control was attempted in certain garrison towns such as Aldershot, Chatham, and Portsmouth under the Contagious Diseases Acts. The results were so ambiguous, and the outcry against the regulations so great, that the Acts were rescinded in 1886, and it is unlikely that any administrative body in this country would now urge their re-enactment. We have it on the authority of FLEXNER that it is the considered opinion of all unbiased observers that regulation of prostitution in the past "has increased, not diminished, the volume of venereal diseases." Advocates of regulation, whilst admitting this, maintain that such a result is largely due to the defective medical treatment given in the past. No doubt that is part of the truth. But there are, in addition, two great human factors which these enthusiasts overlook, factors which are still operative and likely to remain so. The first is that the clandestine prostitutes outnumber the registered ones in every large continental city, it may be by as much as eight to one, so that, even admitting that all registered prostitutes could be kept free from disease, there still would remain this great silent reservoir of untreated or ignored sources of contagion. The second cause for failure is that the male partner has never been segregated. It is possible to shut up the harlot. She is a social outcast. She is a parasite on society. She serves no useful object. But to imprison the male partner is to disturb violently all social and business life. How would the Congress attempt to overcome this enormous handicap to success? Think of the portentous upheaval it would produce. Think of the campaign of bribery, corruption, espionage, blackmail, that would inevitably follow any real attempt compulsorily to treat infected males. Yet if one cannot treat both sides alike how can one hope to effect the proposed result?

State control of treatment is another plank in the programme of the Congress. By this is probably meant a system of free treatment at clinics, subsidised by the State, and open to all venereal patients without consideration of rank or position. This is a more modern line of thought. Instead of, or in addition to, attempting to protect the public by treating diseased prostitutes under

¹ THE LANCET, Nov. 9th, p. 1078.

police supervision, it is suggested that all persons suffering from venereal disease should be under the care of the public health authorities. Obviously there is much to be said in favour of this. For many years it has been tried in the Scandinavian countries, where it met with such success that it was introduced into this country towards the end of the late war. Here the success obtained has not been dramatic, but it has been continuous. By careful newspaper propaganda, by assuring the patients that privacy of treatment is available and that no information will be given of their condition to unauthorised persons, by explanatory pamphlets setting out the dangers of the diseases and the length of time required for treatment, by "continuation" cards and a judicious "follow-up" of those who have stopped treatment before cure, it has been possible to build up machinery which in time, it is believed, will get these diseases under control. No general attempt has been made by interested bodies in this country to introduce penal regulations for absconders—that is those who neglect to continue treatment until cured. Legislation of this nature has been introduced in some of our dominions and colonies, but it has been found that doctors object to being turned into detectives and fail to notify cases, with the result that the laws become a dead letter. Experience shows the unwisdom of legislating in front of public opinion; and public opinion is against doctors giving away their patients' secrets. The moment minatory regulations are introduced to round up absconders from treatment for any disease to which a moral obloquy is attached, at that moment the disease goes underground, and patients no longer come forward willingly. The mere suggestion that neglect to keep up treatment may expose the victim to shame is enough to inhibit desire for such treatment, and thus to frustrate the good intention of the inquisitor intent on saving the sufferer from himself. That is why, when two corporations in Scotland recently tried to obtain Parliamentary sanction to introduce some mild penal clauses for those who ceased to attend, the attempt failed.

Final success can be attained only by educating the public to the dangers of venereal disease, by stimulating the conscience of the community so that the dual standard of morals as between man and woman is no longer accepted as inevitable, and by making facilities for treatment so easily obtainable that there can be no excuse for refusing. In this way we may hope that we shall be able eventually to eradicate venereal disease from our midst, an end which has been the devout wish of every sanitarian since the time of MOSES.

GASTROSCOPY

Two notes appearing in our columns a couple of years ago have indirectly borne fruit in the form of Mr. HAROLD EDWARDS'S contribution to our last issue. He must be one of the first, if not the first, in this country to make systematic use of the flexible gastroscope. He approached it with a certain reserve, aware of the risk that a pretty

piece of mechanism may awake more enthusiasm than its usefulness justifies, but he concludes that the instrument has already earned a place in the management of cases of gastric disorder. It can sometimes contribute to the diagnosis of gastric ulcer, when the radiologist is left in doubt; it can sometimes indicate whether a suspicious ulcer is simple or malignant; and it can often throw useful light on the state of the mucous membrane round the stoma of a gastro-enterostomy.

A pretty piece of mechanism it certainly is, and the merely medical mind can only marvel at the fact that one can see quite comfortably through it whether it lies bent or straight. The special arrangement of lenses within a flexible metal spiral, by which this is made possible, is the discovery of WOLF of Berlin, whose firm for many years has spent skill, time, and money on the technical problems involved. Its reward, financially speaking, seems to be at hand, for the instrument has been in regular use for some years in many of the larger continental clinics, and is attracting attention now in this country and in America. The later models differ from that figured in THE LANCET of Oct. 14th, 1933, in having a brighter light and a narrower rigid part (7.5 mm. diam.), but these are minor improvements; there is no word yet of two major advances that gastroscopists would warmly welcome. One of these is a device for altering the direction in which the instrument "looks," which is normally at right angles to its long axis; flexible gastroscopes can also be made to "look" either directly forward, or laterally and backward, the field of vision in every case subtending an angle of about 60°, but the three possibilities have not yet been combined in one instrument. If that combination were achieved, almost the whole of the gastric mucosa would come within the range of vision, and negative gastroscopic findings in cases of suspected ulcer or carcinoma would have considerable value. The other desirable advance is a camera capable of taking photographs through a flexible gastroscope. HENNING^{1,2} has published many photographs of the gastric mucosa, but they have all been taken through a rigid straight gastroscope, an instrument which he and other experts can now manipulate with safety, but which remains too dangerous for general use. The flexible instrument does not transmit quite enough light to give satisfactory photographs; a still brighter light, provided it is not too hot, or a more sensitive film, might solve this problem. Until it is solved the appearances of the gastric mucosa can be discussed only in verbal descriptions or with the help of drawings, both of which involve rather more of the subjective element than is welcome to the scientific mind.

As we have said, however, Mr. EDWARDS finds that the present instrument can give some help in diagnosis and treatment. His point of view is that of a surgeon. Judging by the experience in

¹ Henning, N.: Lehrbuch der Gastroskopie. Leipzig: Johann Ambrosius Bart. 1935.
² Henning, N.: Die Entzündung des Magens. Leipzig: Johann Ambrosius Bart. 1934.

Germany, where the gastroscopist is nearly always a physician, medicine has even more reason than surgery to interest itself in the gastric mucous membrane. The old tradition that the appearance of the tongue indicates the state of the lining of the gastro-intestinal tract can now be tested, so far as the stomach is concerned, by direct observation, a study which MOUTIER has begun in Paris, publishing this month³ an interesting series of paired pictures showing inflammatory conditions in tongue and stomach. In Germany a number of distinctive and easily recognised inflammatory pictures in the gastric mucosa have been described, and are there the basis for the diagnosis of chronic gastritis, which is made in many patients who would in this country receive the label of functional dyspepsia. As yet however no satisfactory correlation has emerged between the presence and nature of these changes and the patient's dyspeptic symptoms. On the other hand correlation between gastroscopic and microscopic appearances is not lacking. Chronic gastritis is important both as a morbid change in itself and in its relation to ulcer, cancer, and the anæmias, and few will question the need for fuller study of its occurrence and its pathogenesis. To all who concern themselves with the investigation of these problems gastroscopy would seem to offer a useful—and it may be, indeed, an indispensable—method of approach.

THE BATTERSEA GENERAL HOSPITAL

ON Nov. 19th Mr. Justice EVE made the orders which eliminate from the name and objects of the Battersea General Hospital the element of antivivisection. The proceedings in the Chancery Division, described more fully on another page, leave the hospital free to minister to the needs of a poor and populous district without any restrictions on the use of remedies obtained by experiments on animals. The court was invited to consider, amongst other evidence, two affidavits which showed the deplorable effect of the restrictions. One, sworn by Mr. JOHN ROBERT LEE, the senior honorary surgeon, declared that the progress of science and advance in medical knowledge had made it impossible to run a general hospital on antivivisection principles as enunciated in the memorandum of association of the Battersea undertaking. In many cases of disease, said Mr. LEE, relief and cure were obtainable only by use of remedies derived from sources which would conflict with those principles. Antitoxin, for instance, was a necessity for diphtheria; for tetanus inoculations a serum derived from horses would be used; other examples were antistreptococcal serum, insulin, and various drugs which were standardised on animals. In Mr. LEE's opinion it was essential, in order to enable the hospital to be conducted on modern scientific lines, that all reference to antivivisection principles should be omitted from the objects and trusts relating to the hospital. A second affidavit, sworn by Lord ERNEST HAMILTON, the chairman of the

board of management, dealt with the financial effect of the restrictions. The King Edward's Hospital Fund for London would give no help so long as the hospital was subjected to conditions which contradicted the greater part of medical opinion. "Moreover, general opinion has been moving against antivivisection since the dates of the trust deeds, and I am satisfied that no sufficient financial assistance can be obtained from the public or from any general appeal or similar method so long as the hospital is restricted as aforesaid." Mr. Justice EVE, in granting the petition of the hospital for the change of name and objects, observed that he personally sympathised with the original objects and principles, but he was satisfied that they were no longer practicable. He thought the diminution in the hospital's income was due in part to the fact that everybody had now to pay so much in taxation that they had little left to give in charity. We may hope that the chairman of the hospital is justified in his belief that the new freedom from restrictions will mean new sources of revenue.

Antivivisection propaganda can be violently provocative. These controversies distract the energies of persons engaged in medical practice and research. Love of animals is a characteristic of our countrymen and countrywomen. Another British trait is the habit of making allowance for impulsive statements induced by warm sympathies and sincere convictions. The old Battersea principles somehow contrived to encourage moral condemnation of medical and surgical treatment elsewhere. The hospital claimed to be a "visible protest against the demoralising practice of performing any experiments upon animals"; the results of those experiments were described as "dangerous, misleading, and opposed to all true progress." These protests and descriptions have been frankly withdrawn; a chapter is closed and a happier chapter opens. The Battersea General Hospital has its work to do; we can all unite in wishing it prosperity.

THE Institute of Hygiene is praying for a supplemental charter which will enable it to merge with the Royal Institute of Public Health. It has been apparent for some time that there is considerable affinity between the activities of the two institutes: their work is educational and has for its object the promotion of hygiene and of public health. Founded in 1886, the Royal Institute of Public Health trains post-graduate medical students for the D.P.H., and also maintains bacteriological and chemical laboratories and undertakes tests and examinations for municipal authorities and medical practitioners. The Institute of Hygiene was founded in 1903 and incorporated by Royal Charter in 1929. Its aims and objects are to promote hygiene in any or all of its branches, but especially personal and domestic hygiene. The councils of both institutes are satisfied that the objects of each body can and will be carried out with greater efficiency and to the greater benefit of the public by an amalgamation. The appropriate meetings of the councils have been held as well as the necessary statutory meetings of the members, and the voting has been unanimously in favour of an amalgamation.

³ Chevallier, P., and Moutier, F.: *Presse Médicale*. Nov. 16th, 1935.

ANNOTATIONS

THE CHILDLESS MARRIAGE

THE problem of the childless marriage has had far more attention in America than in this country, and something of the progress made there may be judged by two papers presented last summer to the American Medical Association. In the first Dr. Brooke Bland and his colleagues¹ write on functional sterility in the female and its clinical investigation. Both in men and in women it is difficult to interpret sterility unless an anatomical abnormality can be found, for we usually have to consider it in the light of the complicated relationships between the glands of internal secretion. The observations recorded in these American papers bear out Meaker's contention² that as a rule the cause of the childless marriage is manifold—and that there is seldom a single determining factor. It is for this reason that Meaker lays emphasis on the necessity of establishing special clinics in which both husband and wife can be submitted to searching examinations not only by gynaecologist and urologist, but also by a biochemist and an expert in endocrinology. Etiologically functional sterility in the female is classified by Bland according to whether it is primarily due to pituitary, ovarian, thyroid, or adrenal dysfunction. Of these, he says, primary deficiency in the anterior pituitary is by far the commonest, and disease of the adrenals the rarest. The account given of the clinical and biochemical examinations on which a diagnosis is based leaves one realising that an enormous amount of work is entailed in the full investigation of a sterile marriage and that such investigation is seldom done thoroughly—in this country at any rate. The question that naturally arises is: how far do these searching examinations lead to practical results? Much progress has been made in disentangling the complicated hormonal reactions on which ovulation, menstruation, and probably spermatogenesis are based, but so far relatively little advance has been achieved in obtaining extracts that can be used to control these phenomena clinically. Nevertheless, the fact that of 150 women examined at Bland, First, and Goldstein's clinic 53 (or 35 per cent.) subsequently became pregnant, is distinctly impressive. Treatment was, of course, by no means confined to the giving of glandular products, and included such therapeutic methods as low-dosage irradiation of the pituitary gland and ovaries, dieting, and instruction about the most probable time for conception. The figures given by Dr. Paul Titus in the second paper,³ on the causes and treatment of sterility, are in harmony with those of the other writers, and the only point at which a critic might quarrel with him is when he says that absolute sterility in the male, due to gonococcal stricture of the urethra or occlusion of the epididymis, is usually curable by comparatively simple plastic operations. In this country blockage of the epididymal canal following a previous attack of epididymitis is usually regarded as incurable, and most urologists have abandoned the operation of vaso-epididymostomy as useless. Yet F. R. Hagner, in a paper read before the Clinical Congress of the American College of Surgeons in 1930, claimed that 60 per cent. of patients suffering from bilateral occlusion were cured by a plastic operation. Such discrepancies between the

results obtained by English and American urologists show that further investigation will be necessary before a true perspective can be found. Indeed, it is an additional argument in favour of the establishment of a clinic in this country comparable to those founded in America by Meaker. Everyone will agree that the barren marriage may be a source of great unhappiness, and that in their desire for a child many couples would be prepared to go to almost any lengths. The problem therefore should have the same attention in this country as it is apparently getting on the other side of the Atlantic.

ASTHMA AND SINUSITIS

WHILE it is generally conceded that asthma is in the nature of an allergic reaction, the exciting cause of the reaction often remains obscure. Dr. Robert A. Cooke and Dr. R. Clark Grove, of New York,¹ find it very commonly in infective disease of the nasal sinuses. In a series of 688 cases of asthma studied consecutively, they say that infection was the sole cause in 34 per cent., and infection combined with sensitisation to pollens, danders, foods, and the like in a further 15 per cent., making a total of 49 per cent. in which infection played an essential part. If children under ten years old are excluded there remain 470 patients; of these about 8 per cent. had a primary pulmonary infection, while in 45 per cent. sinusitis was the important primary cause. If one inquires why, in certain patients, the symptom of asthma is imposed on nasal infections, the only answer is that these persons have an allergic constitution and become sensitised to bacteria or their products. In all the patients in their series who came to operation, the mucous membrane of the sinuses was of a hyperplastic type, and none exhibited the true pyogenic membrane associated with suppurative sinusitis; of 120 cases recently studied, on which operations had been performed, no less than 80 per cent. had nasal polypi. For antral infection the complete Coldwell-Luc operation on the antrum was always adopted, because the intranasal operation was not found to be sufficient; external operation on the frontal sinus was never undertaken, but ethmoidectomy was often performed, and the sphenoidal sinus was opened when necessary, all these operations being as a rule bilateral. Definite improvement of the asthma followed in 70 per cent. of all the cases, and in 86 per cent. of those who received complete surgical treatment. These results were not immediate; indeed increasing proportions of improvement were seen with the passage of time; thus complete or nearly complete cure was noted in 29 per cent. 6–12 months after operation, in 36 per cent. after 1–2 years, and in 51 per cent. of those followed for 2–3½ years. The benefit is ascribed to a gradual elimination of infection in the deep-seated bronchial glands or mucosa.

Cooke and Grove's finding that in nearly half their cases the asthma was caused by nasal sinusitis is so surprising that it will not gain general acceptance without further support. It will be noted that wherever operation was performed the membrane of the sinuses was hyperplastic, and that none showed the true pyogenic membrane associated with suppurative sinusitis. This hyperplastic sinusitis is a somewhat elusive entity, and they give no details of their methods of diagnosis—whether the sinuses are examined by proof puncture and, if so, whether the

¹ Bland, P. B., First, A., and Goldstein, L.: Jour. Amer. Med. Assoc., Oct. 19th, p. 1231.

² Meaker, S. R.: Human Sterility: Causation, Diagnosis, and Treatment. London, 1934.

³ Titus, P.: Jour. Amer. Med. Assoc., Oct. 19th, p. 1237.

¹ Arch. Internal Med., October, 1935, p. 779.

washings are examined bacteriologically or whether they rely wholly or in part on radiological examination. Thickening of the living membrane of the sinuses is often demonstrable by skiagraphy in allergic conditions of the nose, as in hay-fever, and is generally considered a manifestation of the disease rather than a factor in its causation. Again, in 80 per cent. of their operation cases nasal polypi were present, and if these form a part of the series of 470 patients already mentioned it looks as though over 20 per cent. of their asthma patients had polypi, in which case they can hardly represent a true sample of the asthma population. The claim, however, remains that of 120 patients selected for operation, 84 showed definite improvement after operation on the sinuses; and 38 of them afterwards had asthma either rarely or not at all. Such a result cannot be lightly passed over.

PHILOSOPHY OF A PHYSICIST

SOME essays and addresses by one of the most distinguished leaders in modern mathematical physics¹ provide an admirable illustration of the truth that in the right hands nearly all great principles are capable of simple expression. They would have made a more coherent whole if they had been amalgamated and rewritten; but they might well have become less interesting. Running through them are two leading ideas which all may ponder with advantage. Prof. Schrödinger wonders in the first place whether science is as objective as some, generally young, people often think. History is certainly not, for none of us would read it if it had no colour from the interpreter. And he makes out a good case for the conclusion, almost blasphemous at first sight, that much the same applies to the higher physics, which, as he points out, reflect the fashion of thought of their day as well as the general outlook of their apostles. And in the second place he repeatedly reflects on what he calls the amazing discovery of statistical truth—propositions, that is, which are true for whole populations of atoms and not necessarily true for any individual. Hence one may predict the behaviour of populations but not that of individuals. The idea would have been less fresh to him if he had been a biologist; and its transference to the dead world is yet another example of the incorporation of conceptions derived from the live world into the explanations of the exact sciences. There is much edification to be had in contemplating the similarity between the behaviour of animals and the vagaries of a particle in Brownian movement; it is no superficial analogy.

CUSHING'S DISEASE

THOUGH it is only three years since Harvey Cushing published an account of the peculiar disease that bears his name, no less than 66 cases are now on record. These have lately been analysed by Dr. Vratislav Jonás,² and he is able to add to their number 7 others observed in the clinic of Prof. Hynek in Prague. All 7 seem quite typical with the exception of the second. Here the patient was a woman of 28, and the disturbance started with diabetes insipidus: the pituitary gland, examined by serial sections, showed no abnormality in the anterior lobe, but the posterior lobe and pars intermedia were replaced by scar tissue. Autopsy reports are given only for this and for the first case,

in which a basophil adenoma of the anterior lobe was disclosed. It is of interest that the urine was investigated for the presence of a follicle-stimulating substance and the result was positive in two instances only, in females aged 15 and 33 years. Jonás's analysis of published reports shows that three-quarters of the patients have been women. The most constant symptom was a rapidly acquired adiposity, but sexual disorders were found in two-thirds. The most constant physical sign was arterial hypertension (88 per cent.), striae of the skin ranking next with 71 per cent., and obesity of characteristic distribution in about the same proportion. Skeletal decalcification was observed in 40 out of 55 examined cases, and a lowered tolerance for carbohydrate in 35 out of 49. It is noteworthy that an increase in the red blood-cell count was found in only 46 per cent. Sufferers from this disease are particularly liable to die from sepsis, but observation now seems to show that the illness need not necessarily be progressive and fatal; in other words, there are benign forms. Jonás concludes from the histological reports that the pathogenesis is by no means clear, but from the clinical aspect this syndrome is sufficiently defined to merit its acceptance as a disease *sui generis*.

MALIGNANT CELLS IN SPUTUM

CANCER cells are rarely found in the sputum, but that is partly because they are not looked for or recognised when seen. As Hoesslin pointed out long ago in his monograph on the sputum, when present they are almost invariably in clumps of some size. L. S. Dudgeon and C. H. Wrigley have elaborated¹ a staining technique for detecting neoplastic cells in sputum, which is a further development of a method for the quick diagnosis of malignant tumours published by Dudgeon and C. V. Patrick some years ago.²

Wet films from sputum are fixed in Schaudinn's fluid, prepared by adding one volume of absolute alcohol to two volumes of a saturated aqueous solution of mercuric chloride. Immediately before use glacial acetic acid is added to the strength of 3 per cent. Fixation is achieved by immersing the slide in the fluid for 20 minutes; but if a rapid diagnosis is needed an immersion of two minutes is enough. The slide is then transferred to methylated spirit to which a few drops of tincture of iodine have been added and is then washed in distilled water. Films are stained for about two minutes or less in Mayer's hemalum (hematoxylin 1 g. dissolved by heat in 1000 c.cm. distilled water; to this are added 0.2 g. sodium iodate, 50 g. ammonia alum, and finally 20 c.cm. glacial acetic acid). The slide is then transferred to tap water and counter-stained with a weak solution of eosin.

Sputum from 58 cases of suspected malignant growth of the lung or respiratory tract was examined by this method. In 26 (68 per cent.) of 38 proved cases of carcinoma of the lung or larynx it was possible to establish the diagnosis from the examination of the sputum, and in the majority of instances the histological type of growth present could be distinguished. Particles of new growth in sputum, when fixed and stained by the authors' method, presented two different types: (1) The common form associated with oat-cell carcinoma. These fragments, which stain deep blue, consist of a cluster of cells containing typical oat-shaped cells. (2) Fragments of squamous or columnar cell growth. The individual cells in this group are differentiated from those of the oat-cell variety by their greater size, larger nuclei, and a considerable amount of protoplasm which stains

¹ Science and the Human Temperament. By Erwin Schrödinger. Translated by J. Murphy. London: George Allen and Unwin Ltd. 1935. Pp. 154. 7s. 6d.

² Cas. lek. ceskych, October, 1935.

¹ Jour. Laryng. and Otol. 1935, 1, 752.

² Brit. Jour. Surg., 1927, xv., 250.

pink with eosin. The fragments stand out prominently in the films and can be seen with 2/3 objective. The blood-streaked portions of the film are those in which the carcinoma fragments are most likely to be found. The authors add a short description of the various types of inflammatory cells found in sputum which may be confused with carcinoma cells.

AN EXCURSION INTO VITAL STATISTICS

IN last week's issue of the *New Statesman and Nation* attention is drawn to the fallacy of using crude death-rates as a measure of success or failure in the hygiene of a community. Since the force of mortality varies considerably with sex and enormously with age, the crude death-rate—i.e., the total death-rate at all ages—must largely depend on the age- and sex-constitution of the population under consideration, and the comparison of such rates between one area and another may be very fallacious. It is therefore idle, as the *New Statesman* points out, for people to say that there can be no serious malnutrition in the depressed areas because the crude death-rate is not appreciably higher in South Wales and Durham than in the rest of the country. This kind of argument may have been advanced by irresponsible persons; certainly no government department or private person with any knowledge of vital statistics would dream of putting it forward. For a comparison of any validity at all the first essential is a standardised death-rate, or (better still) death-rates by ages for each sex; the second essential is a yardstick against which to assess their normality or abnormality. The comparison adopted by the *New Statesman* is that between the observed deaths in the depressed areas in 1934 in each sex and in four broad age-groups, and the deaths that would have occurred in these areas if the inhabitants had suffered the same death-rates in each group as prevailed in England and Wales as a whole in 1934. By this procedure it is found that whereas the expected deaths were 105,181 the actual deaths were 126,508, an excess of 20 per cent.; "21,000 died," it is concluded, "before their time because they were poor." When attention is transferred from the total deaths to the deaths in particular age-groups and for males and females the excess is found to be greatest in childhood and greater among females than among males. From such figures two main conclusions are drawn: first, that the difference in the death-rates between the depressed areas and the rest of the country is greatest in the case of children; and secondly, that among the adult population women "are being sacrificed more generously than men." If these conclusions, derived from a few hours' simple work, are justified, they are obviously of the very highest importance and must show gross neglect of vital statistics on the part of those in authority. Our own view, however, is that the comparison which has been adopted is as misleading as the use of the crude death-rates that the *New Statesman* justly stigmatises. To reach the "expected" deaths in the depressed areas the rates of the whole country, it will be noted, are being applied to a particular section of it, a large part of which lies in the north of England. It is well known that mortality in this country increases steadily as we pass from south to north—whether the reason be malnutrition, climate and lack of sunshine in smoky areas, overcrowding, or something else. This feature has been observed year in, year out, long before the economic depression. Thus, if we apply the death-rates of the whole country to any industrial area of the northern counties, whether

depressed or flourishing, there is very little hope of its making a favourable showing under the test. Even in their heyday the county boroughs of the north would have come out unfavourably. Similarly it should be noted that the death-rates of the whole country include within them the lower rates prevalent in rural areas; the number of county boroughs in any part of the country, depressed or flourishing, that have standardised death-rates below the rate for England and Wales as a whole is relatively small. In such a comparison, therefore, we are not comparing like with like. It may be that the county boroughs as a whole have higher death-rates than the rest of England and Wales because of their poverty and all that it denotes. But this, unfortunately, is not a prerogative of the depressed areas. Before we can show mathematically that the experience of these areas has been affected, in addition, by their present economic state, as the article in the *New Statesman* suggests, we must demonstrate a rise in mortality, or a slackened rate of decline, in these particular parts which is not apparent in other areas, as far as possible similar in all other respects, but not suffering severely from the depression. To secure such a satisfactory comparison is exceedingly difficult, and the detection of cause and effect is still harder. The question of the health of the depressed areas cannot in fact be answered by superficial statistical methods.

THE ORIGIN OF THE MILK SUGAR

SOME striking observations on the production of the milk sugar, lactose, by the active mammary gland are recorded by Grant.¹ The physiological evidence which had previously accumulated, in particular that provided by Paton and Cathcart and by Nitzescu, strongly suggested that the lactating breast is capable of extracting glucose from the blood and of converting it into lactose. The new evidence comes from a study of the synthesis of lactose by active gland in vitro. Slices, 0.5 mm. thick, of the mammary glands of freely lactating guinea-pigs were kept aerated in physiological salt solutions for six hours at body temperature. It was found that when glucose was present lactose synthesis occurred, the gland tissue producing this sugar in amounts equal to 2–4 per cent. of its own weight. (Probably the actual synthesis was considerably greater than this, since in control experiments lactose was found to disappear from the gland.) Although lactose consists of glucose condensed with galactose, the addition of galactose alone to the gland tissue did not result in lactose synthesis. Hence, whilst the galactose part of the lactose can be formed from glucose, the glucose part cannot be formed from galactose. Further, it appears that galactose can be formed from glucose only when it is to become a part of the lactose molecule; "no evidence has emerged," Grant says, "of the synthesis of galactose in the free state, but only of this sugar combined through its first C atom to the fourth atom of a molecule of glucose forming lactose."

Nitzescu² found that in the fasting animal the lactose content of the milk was lowered, but the normal level was restored by the injection of glucose, galactose, fructose, and maltose. His experiments could not show whether the last three sugars were converted into lactose directly, or only after preliminary transformation into glucose. In the new experiments Grant has found no definite lactose

¹ Grant, G. A.: *Biochem. Jour.*, 1935, **xxix**, 1905.

² Nitzescu, I. I.: *Compt. rend. Soc. de biol.*, 1925, **xciii**, 1319.

synthesis from galactose, fructose, and mannose, but the question is still not answered. For the mechanism by which these sugars are converted into lactose in the gland, if it exist, might be damaged under the artificial conditions *in vitro*, whilst the synthesis from glucose might rest on a more stable mechanism. Such considerations as these must always be borne in mind to avoid the dangers of attempting to apply to the living animal what is found to happen in the flask. These dangers are increasing now that many stimulating results are being obtained with the tissue-slice technique; such, for example, as those obtained by Krebs² on urea and ammonia formation. The present work, however, is at the worst an interesting *in-vitro* demonstration of a sugar inter-conversion; whilst, on the other hand, it may be of considerable physiological significance.

HEREDITARY OPTIC ATROPHY

THE clinical picture which passes under the name of hereditary optic atrophy has been well recognised since Theodor Leber's classic description appeared in 1877. It cannot however be said even now that the mode of inheritance is clearly established; so much so is this the case that some authorities speak of "modes" of inheritance rather than "mode." How serious are the gaps in our knowledge has been shown by the critical surveys beginning with that of Nettleship in 1909 and continued by numerous authors. To reduce the mass of pedigrees that have been published into some sort of system, different writers have found themselves compelled either to assume varying modes of inheritance—even to the extent of a change in the mode within the same family—or to assume that in addition to typical Leber's disease there are a number of conditions which simulate it. The last explanation has been made plausible by the work of Behr, Drexel, and others. Drexel has shown that central nervous system lesions are present in some of the families described as suffering from Leber's atrophy, whilst Behr has drawn attention to what he calls "complicated" hereditary optic atrophy of childhood, a condition in which the complications are by no means clear-cut and may have been due to cranial deformities in the particular family reported. It is of course possible that cases of Leber's disease, attracting as they do the attention of ophthalmologists rather than of neurologists, may not have been as fully investigated as might be desired, but the fact remains that carefully collected pedigrees do not always conform to the requirements of a sex-linked recessive character. Fleischer and Josenhans have escaped this dilemma by attempting to exclude from the picture of Leber's atrophy cases which run an atypical course, such as those ending in either complete blindness or considerable recovery. But even such an arbitrary procedure does not clear up all the difficulties, for the sex distribution though satisfying theoretical requirements in broad outline shows difficulties in the numerical incidence. Thus it is difficult to explain both the high incidence of affected sons and the high incidence of carriers amongst unaffected daughters. An escape into the explanation of "irregular dominance" is not warranted. It is of course not necessary to assume that Leber's atrophy is not a sex-linked recessive when it appears in women, for such women may be homozygous. None the less there is evidence from the work of Japanese observers that the condition or

one simulating it may be dominant, being transmitted directly from generation to generation. Recently Dr. A. H. Thompson and Mr. G. T. W. Cashell¹ have examined a family with hereditary optic atrophy showing a number of divergences from typical Leber's disease. The atrophy appears to have been present at birth; the sex-incidence was equal, if not actually excessive, for females; inheritance was dominant through affected mothers; and instead of central scotoma there was shrinking of the peripheral field, with progressive diminution of vision and ultimate complete atrophy of the disc. The great interest of this family lies in the transmission through an affected female to the exclusion of transmission through males. Such sex-linkage raises important theoretical points.

THE INVESTIGATION OF CANCER

THE £32,000 which the British Empire Cancer Campaign has been able to distribute during the past year has been spent in two ways: first on purely experimental investigation of the causes of cancer, and secondly in attempts to improve known methods of treating it. The campaign does other important work in disseminating information, linking separate centres, and educating the public; but its twelfth annual report, presented this week, is naturally devoted mostly to the results of research.

The experimental study of cancer tends to concentrate at present on two main problems: the changes in the cell that lead to neoplasms, and the factors that bring about these changes. The work of Prof. E. L. Kennaway and Prof. J. W. Cook at the Cancer Hospital has shown that it is possible to produce cancer by the repeated application of pure chemical substances, closely related chemically to the sterols; so that we are on the track of changes by which substances always present in the body can be rendered carcinogenic. An investigation is being undertaken, for example, at the Cancer Hospital on the way in which excessive sunlight will cause epithelioma of the skin—an investigation which raises the question whether ergosterol (the source of vitamin D) may not be converted by light into a slightly different chemical compound which induces malignant change. In Manchester Dr. C. C. Twort and his colleagues (whose latest work is reported on p. 1226 of our present issue) find difficulty in distinguishing the mechanisms that lead to dermatitis from those that lead to cancer; in their view cancer "is a defensive process, and not a purposeless, useless process as defined by early pathologists." Suggestive evidence is brought forward, moreover, from the Mount Vernon Hospital that "the growth rate of the tumour cells may alone determine innocence or malignancy." At Leeds the possibilities of inhibiting the neoplastic process are being further explored, and Dr. I. Berenblum reports that cantharidin as well as mustard gas will interfere with the carcinogenic action of tar. These two substances have totally different chemical constitutions, and it looks as though the inhibition was associated with a special type of cell change rather than with chemical structure of the inhibitor.

One of the noteworthy advances of recent years has been Prof. McIntosh's demonstration at the Middlesex Hospital that in fowls tar-induced tumours can be propagated through filtered extracts. This brings carcinogenesis in mammals into some sort of relation with the filtrable malignant tumours of

² Krebs, H. A., and Henseleit, K.: *Zeits. f. physiol. Chem.*, 1932, ccc., 33; Krebs: *Ibid.*, 1933, ccvii., 191.

¹ *Proc. Roy. Soc. Med.*, 1934-35, xxviii., 1415.

birds, which behave as though produced by a virus. Some of Prof. McIntosh's tumours have now passed through 30 passages and they are held to show the characteristic metabolism of true malignant growths: "in the case of the fowl it appears, therefore, that carcinogenic agents act only as stimulants of proliferation (hyperplasia) and that their action is ancillary to malignancy and not the cause." Prof. E. Mellanby brings forward experiments showing that the filtrable agent of a Rous sarcoma attaches itself readily to the normal cells of the body. Meanwhile information about the nature of these filtrable agents is being derived from another source. The method of high-speed centrifugation which has lately led to striking advances in our knowledge of the viruses of infectious diseases has been applied by Prof. McIntosh to filtrates from sarcomas, and by spinning these at a rate of 40-60 thousand revolutions a minute a concentrated residue has been obtained, showing that the infective agent is particulate and therefore probably a virus.

On the clinical side of pathology it is interesting to find a not unfavourable report from Birmingham on the vanadic acid reaction introduced by Bendien. The investigators believe that "although the reaction is not absolutely specific for carcinoma, it affords a very helpful means of estimating the patients' response to therapeutic measure, and is of definite prognostic value." The report also contains an account of important work on the spread of malignant tumours of the bowel, which is being done at St. Mark's Hospital. Dr. Thomas Lumsden at the London Hospital continues his endeavour to prepare effective anti-cancer sera and similar attempts are being made at the Middlesex. At Sheffield Prof. Mellanby holds out hope of its being possible to make use of the toxic action of cobra venom on cancerous tissue and simultaneously antagonise its harmful effects on tissues by means of anti-venom serum. Renewed efforts to increase the influence of X rays by injecting substances which will make a tumour more sensitive to them are being made at the Middlesex Hospital, with promising results, and in many parts of the radiological front there are other small advances to report. At St. Bartholomew's Hospital it is proposed to install an X ray apparatus with a voltage of a million; "the amount of radiant energy produced by such a machine will exceed," it is said, "that of any form of radium 'bomb' at present in use or designed." Also from St. Bartholomew's Dr. W. M. Levitt presents striking results in the treatment of carcinoma of the œsophagus with large doses of X rays—a method whose usefulness is unfortunately limited by the danger of damage to lungs. At Newcastle and elsewhere preliminary work is being done on the action of short wireless waves on the living cell. These are only a few of the directions in which inquiries are being pursued, and no one can read the report without astonishment at the diversity of knowledge—much of it from unexpected sources—that is now being applied to research on malignant disease.

BACTERIAL ALLERGY

CLINICIANS and pathologists have for some time wanted an answer to the question whether a skin response to the intracutaneous injection of a bacterial vaccine indicates an allergic state induced in the patient by similar bacterial antigens. It is obviously unsatisfactory to label an organism isolated from the sputum of an asthmatic patient as the cause of the allergic state solely on the grounds that it gives,

when injected as a vaccine into the patient's skin, a larger reaction than any of the other organisms obtained from the same sputum. Much work is necessary to determine, first, to what extent positive reactions to bacterial vaccines occur in persons displaying no allergic phenomena, and, secondly, if such reactions are found to be positively correlated with allergic phenomena, to discover what part of the complex mixture of antigens in the bacterium is responsible for the reaction. The specific substances, mostly polysaccharide in nature, of many bacteria are known to produce anaphylactic shock in specifically sensitised experimental animals. The work of Tillett and Francis¹ and of Finland and Sutliff² has shown that an immune response to the pneumococcus in the course of acute lobar pneumonia results in the sensitisation of the skin to the injection of the specific polysaccharide of the infecting organism. Dr. Harley³ now brings forward further evidence on this subject and describes a small series of experiments indicating that the allergic response to injection of pneumococcal vaccines is twofold. The first part of the response is specific and related to the high virulence of the pneumococci used to make the vaccine and to the type-specific immunity and anaphylactic sensitisation to specific polysaccharide; the second is produced by the injection of vaccines from both virulent and avirulent pneumococci, and is not type-specific, since skin reactions can be obtained in animals so immunised by injection of any type of pneumococcus or of the *Streptococcus viridans*. The work is welcome as an indication that bacterial allergy is being examined in the light of the very extensive work on the antigenic analysis of bacteria that has been taking place during the last fifteen years.

QUADRUPLETS IN HOLLAND

A CASE of quadruplet pregnancy is reported by L. J. Frijda (Nederl. tijdschr. v. geneesk., 1935, lxxix., 4890).

The mother, aged 31, had already had three children, the youngest in September, 1934. One menstrual period followed the birth of this child, in October, 1934, after which there had been amenorrhœa. In January, 1935, she noticed swelling of the legs, and in February began to suffer from vomiting, headache, and backache, for which she consulted Dr. Frijda. She had at that time a blood pressure of 155/85, œdema of the legs, and slight albuminuria. The uterus was not unduly large. On a salt-free diet the œdema and albuminuria disappeared, and the pregnancy was therefore allowed to go on. Until labour set in, multiple pregnancy had not been suspected. Pains began on July 9th, 1935, at 6.30 A.M. The first child was born alive at 10.15 A.M. but the uterus did not become appreciably smaller, and it was realised that the case was one of multiple pregnancy. Five minutes later a dead and macerated fœtus was born, followed in another five minutes by a living child. Fœtal parts could still be felt, and internal examination revealed an unruptured amniotic sac containing the fourth fœtus lying transversely. The membranes were ruptured and the child manually delivered; it was macerated. The placenta, expelled spontaneously 15 minutes later, was single, with the four umbilical cords inserted symmetrically near its edge. It weighed 2 lb. 9 oz. and measured 27 in. across. The chorion was single. The amnion was double, one of the sacs having enclosed three of the children. The children were females. The first living child weighed 3 lb. 8 oz., the second 3 lb. 13 oz. Both did well, and the puerperium was uneventful.

Frijda points out that uniovular quadruplet pregnancy is extremely rare. He can find records of only two cases.

¹ Tillett, W. S., and Francis, T., *Ann. N.Y. Acad. Sci.*, 1929, l., 687.
² Finland, M., and Sutliff, W. D., *Ibid.*, 1931, liv., 637.
³ Harley, D., *Jour. Path. and Bact.*, November, 1935, p. 491.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXIX.—PROGNOSIS IN INTERNAL DERANGEMENT OF THE KNEE-JOINT

THE term internal derangement of the knee-joint is often used as if it was synonymous with injury of the semilunar cartilage. It actually, however, includes a much wider group of cases, and it is because it is used with this general significance that there is considerable misconception of the prognosis in straightforward cases of injury of the semilunar cartilages. It is convenient to keep together a group of cases in which there is a derangement of normal functions of the knee-joint either (1) as a single isolated incident, or (2) as an incident which recurs at more or less frequent intervals. The defect may be: (1) interference with full normal mobility, shortly described as locking; (2) loss of stability from muscular insufficiency; (3) loss of stability from hypermobility.

In (1) the defect may be temporary, terminating as soon as the mechanical obstruction is removed. In the case of locking by a displaced cartilage or loose body, the obstruction may disappear by a natural movement or as the result of manipulation. In (2) muscular insufficiency may be expected to correct itself or can be overcome by appropriate treatment as soon as its cause has been removed. In (3) hypermobility is due to rupture or laxity of the crucial or other ligaments. It will continue to disable the joint unless it can be overcome by mechanical or surgical means.

RECURRENT DERANGEMENT

It must be recognised that recurrent symptoms may be due to any of the three causes already mentioned: recurrent locking may result from the presence of a torn or hypermobile cartilage or of a loose body; recurrent collapse of the knee may occur because of weakness of the quadriceps muscle; and recurrent subluxation takes place when the crucial ligaments are lax. But recurrent derangement of the knee may also result from other conditions such as lateral subluxation of the patella and effusion in cases of osteochondritis dissecans or of synovial cysts. And it must also be remembered that a mild inflammatory lesion of the knee may be lit up by slight trauma, which produces effusion, pain and loss of movement, and may perhaps lead to the diagnosis of internal derangement.

The difficulty of definition and sometimes of accurate diagnosis renders it necessary, when considering prognosis, to confine the discussion as far as possible to definite pathological lesions. It would be impossible in a short space to deal adequately with all the conditions which might be included under internal derangement of the knee-joint. Further consideration here will therefore be confined to (1) injuries definitely diagnosed as due to damage of the internal and external semilunar cartilages, with displacement at the first accident, and (2) recurrent derangement (collapse, locking, or effusion) due to injury of a semilunar cartilage, the presence of a loose body, or displacement of an uninjured external semilunar cartilage (snapping knee in its major and minor varieties).

LOCKING OF THE KNEE AT THE INITIAL INJURY

When a knee becomes locked as the result of a twisting strain, it is the custom with most surgeons

at the present day to treat the condition by manipulation and to refrain from operation unless manipulation fails or unless there is later a recurrence of symptoms. But before manipulation is carried out it must be presumed that every care has been taken to exclude conditions other than an injury of the semilunar cartilages. An X ray excludes fracture of the tibial spine, bony loose body, and fissured fracture of the patella. Lateral dislocation of the patella and injury of the internal lateral ligament must also be remembered. In the last named (a common accident), manipulation is positively harmful and delays recovery.

Presuming that the diagnosis of injury and displacement of one of the cartilages has been confirmed, manipulation under an anæsthetic may have one of the following results:—

(a) The joint may be immediately and completely comfortable, movement is full, and although there is probably some effusion, this disappears rapidly, and the muscular power returns quickly with use. This result indicates that the torn cartilage has either returned into its normal position or at least that it has passed into a position in which it is no longer obstructing movement.

(b) There may be considerable improvement but extension of the knee may still not be quite complete. With subsequent treatment by massage, faradic stimulation of the quadriceps and exercises, the improvement continues until at the end of two or three weeks the function is nearly normal. This probably indicates that the cartilage is split round the margin (bucket handle split); it has not returned to its normal position but is displaced centrally into the intercondylar notch. This occurs frequently in the case of the internal cartilage. It may occur, but not commonly, in the external.

(c) There may be little or no improvement as the result of the manipulation, and only very slow improvement as the result of after-treatment. This probably indicates that the position of the cartilage has not been affected by the manipulation, and that it is blocking the movement as badly as ever. It indicates the advisability of operative interference provided that there is a reasonable certainty that the diagnosis is correct. The possibility that the case is one of injury of the internal lateral ligament should always be reconsidered. In such a case the knee may be expected to extend easily and without force whilst the patient is under the anæsthetic, flexion recurring however immediately afterwards.

In a considerable proportion of cases the manipulation may be expected to restore the function of the knee at least for the time being. The prognosis as to the future in such cases is important but difficult. Some surgeons advise a considerable period of rest or even of immobilisation after the initial injury. They apparently hope that the torn cartilage will heal or that possibly the torn portion will become adherent in a place in which it is doing no harm. Experimental and operative experience is all against this treatment. It would seem that repair does not occur in the semilunar cartilages themselves, and at operation a torn portion of cartilage is never found to be adherent in its displaced position. Clinical evidence is also against prolonged rest and immobilisation. Recurrence of symptoms at a later date is just as likely to occur after such

treatment as after early use. Moreover, all are agreed that restoration of muscular power is important, and this can only be attained by use.

When a knee has recovered, either naturally or as the result of manipulation, from the first injury, it is quite impossible to predict its future behaviour. In some cases no recurrence occurs even when fairly strenuous exercise (golf, tennis, rackets, swimming) is taken. In some cases recurrence of locking or of other symptoms results from quite simple movements. There appears to be no way of forecasting the future. A very guarded prognosis should therefore be given and the patient should be warned that the knee may give way with or without locking, or may swell as the result either of a twisting strain or simply as the result of increased exercise. It may be said, however, that after a definite cartilage injury the knee cannot be expected to stand up to forms of exercise which involve a considerable risk—e.g., football, hockey, ski-ing. Those who wish to continue these pursuits should always be advised to submit to operation when there has been a definite cartilage injury. The same applies to cases in which an unstable knee involves a special risk—e.g., mountaineers. It is doubtful whether after injury of the external cartilage recovery with a reliable knee ever takes place without operation. As a rule when this cartilage has been injured any strenuous exercise produces pain and swelling even if recurrent locking does not occur. This is explained by the lesions that are usually found at operation upon this cartilage. When the external semilunar cartilage is found to be injured there is usually either a bucket handle tear around the margin, the greater part of the cartilage being separated, turned over and displaced to the inner side of the external condyle, or else there is a crush or tear of the cartilage opposite the external lateral ligament, a considerable part of the cartilage being crushed between the condyle and the head of the tibia and its substance frayed out.

PROGNOSIS AFTER OPERATION

In the average case in which the diagnosis of a torn semilunar cartilage, or a loose body or of a hypermobile external cartilage, has been proved correct at operation and the cartilage or loose body has been removed, the prognosis is excellent. A very large proportion of patients have a knee which is not only normal for all ordinary purposes but which is strong enough to permit them to indulge in the most active forms of sport with safety. They are able to play football (both games), hockey, and tennis, and to ski and swim.

FAILURES

That there are failures to secure a really satisfactory result must be acknowledged, as in the case of every other operation. But these are not numerous, and they diminish in number as surgeons become more skilful in diagnosis and treatment.

Infection of the joint is the one cause of real catastrophe. At the present day it is so rare that it need hardly be considered. It should however be borne in mind that if a septic focus exists in the body a blood-borne infection may extend to the knee as to any traumatised area. Patients sometimes desire to have minor operations, such as the extraction of a tooth and removal of tonsils, carried out at the same time as an operation upon the knee. Such procedures, involving risk of infection, should be absolutely prohibited. They have been the cause of some of the catastrophes.

Injuries of the ligaments at the time of operation may leave hypermobility afterwards. Needless to say, incisions must be planned in such a way as to damage the knee as little as possible. The internal and external lateral ligaments, crucial ligaments, and attachment of all parts of the quadriceps muscle must be respected.

Imperfect after-treatment may have failed to restore complete movement and strength. The test should be that the patient is able to do a tip-toe, knee-bend exercise right down on to the heels and up again with equal weight on both feet, and also to kneel and sit right back on his heels. Such a result is attained in the average case in six to eight weeks. Post-operative hæmorrhosis occurs occasionally in the practice of practically all surgeons. It is a troublesome and painful complication which does not affect the ultimate prognosis, although it considerably delays recovery of normal function.

Failure at operation to find sufficient damage to account for the symptoms or failure to find and remove the whole of the trouble has in the past been a frequent cause of unsatisfactory results. Naturally if the injury has not been found and removed, recurrence of symptoms is probable; the more definite the injury discovered the better the prognosis.

The presence of an *additional factor*—e.g., laxity of the crucial ligaments—sometimes occurs in conjunction with an injury of a semilunar cartilage. The patient remains liable to the symptoms due to the additional factor, such as weakness and the liability of the knee to subluxate.

Wrong diagnosis.—Perhaps the most frequent mistake is the failure to diagnose recurrent subluxation of the patella, and early arthritis.

Late recurrence of symptoms of locking due either to injury of the other cartilage which has been left behind or to the formation of a loose body. There appears to be a definite, although slight liability to the formation of loose bodies after cartilage injuries, probably from fragments of cartilage lying loose in the articular cavity.

Age.—Although naturally young patients make the most rapid recovery after operation, age is not necessarily a contra-indication of operation for internal derangement of the knee-joint. This injury occurs sometimes in patients over 60 years of age, and loose bodies are not uncommon in people of this age. Operation may be undertaken with safety and perfect results obtained. The removal of both internal and external cartilages from the same knee is sometimes necessary. After such removal the knee functions in a perfectly satisfactory manner.

Arthritis.—There is naturally some fear lest removal of a semilunar cartilage may cause later on an arthritis of the knee. Certainly a knee-joint in which there has been an internal derangement is rather more likely to be the seat of subsequent arthritis than a normal knee. But it is very doubtful whether the operation is in any sense the cause of the arthritis. In fact it would seem that arthritis occurs much more frequently in cases in which an injured cartilage or loose body has been allowed to remain in situ for several years and to cause persistent symptoms. A very large proportion of cases remain free from arthritic changes after operation, and the removal of an irritating foreign body would appear to be a preventive rather than a cause of arthritic changes.

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SPECIAL ARTICLES

GAS-AND-AIR APPARATUS FOR MIDWIVES

BY JOHN ELAM, B.A. Camb., M.R.C.S. Eng.

VISITING ANÆSTHETIST TO THE WELLHOUSE HOSPITAL, BARNET

Two years ago Dr. R. J. Minnitt, of Liverpool showed¹ how, by the use of an automatic apparatus which delivered to the patient a mixture of nitrous oxide and air, the pains of labour could be satisfactorily relieved without danger to mother or child and without hindrance to the work of the accoucheur. Since its introduction, Dr. Minnitt's method has been thoroughly tested, and there appears to be only one obstacle in the way of all parturient women enjoying the relief which gas-and-air analgesia can give—namely, the fact that a large proportion of confinements are attended by midwives without the presence of a doctor. Midwives are not at present allowed to administer analgesia to their own patients, and before this ban is lifted the gas-and-air apparatus must be made available for the midwife and reasonably easy for her to carry about.

The gas-and-air machine devised by Dr. Minnitt is suitable for use in hospital, but even the so-called portable model with its two heavy gas cylinders would be a formidable burden for district midwives, who are not equipped with motor-cars. If gas-and-air is to come into general use, some way must be found of separating the mechanical part of the apparatus from the cylinders. At the Wellhouse

Hospital, Barnet, we have had made for us a cheap metal stand holding two gas cylinders joined by a coupling to which the mechanical part of Dr. Minnitt's apparatus can be screwed when desired. This device solves the problem of portability, the stand and cylinders being sent to the patient's house when the confinement is due, the midwife bringing with her only the actual machine, which only weighs 5-6 lb., to be attached to the

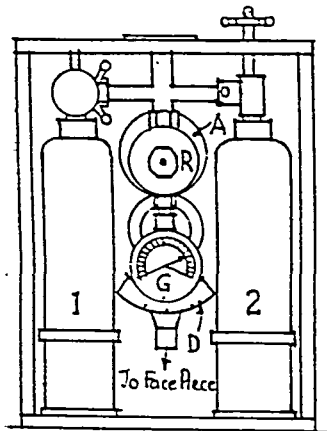


FIG. 1.—Sketch of the portable Siebe Gorman gas-and-air apparatus ("Nitrox") in its case, with two 100-gallon gas cylinders. The whole weighs about 30 lb.

stand when she is ready to administer the gas-and-air. Two new gas-and-air machines have recently been tested at the Wellhouse Hospital.

I

First there is Messrs. Siebe Gorman's apparatus of which there are two models, one with a fixed gas percentage, the other with a variable one. In this apparatus (Figs. 1 and 2) the gas flows through a pressure-reducing valve R and thence into a chamber A closed by a rubber diaphragm and valve. From this chamber gas is led to the patient by means of tubing and face-piece. A pressure gauge G shows at what pressure the gas is flowing.

When the patient inhales the valve is lifted, pressure is reduced in A, and the rubber diaphragm is drawn forward

pressing on a lever which allows gas to flow. As the gas flows, air is drawn in and the patient receives a constant percentage of gas-and-air (60 per cent. gas). When the patient ceases to inhale, the diaphragm in A expands and allows the lever to shut off the flow of gas.

In the variable percentage model there is a dial D behind the pressure gauge on which are numbers representing the percentage of gas in air. By turning the dial one of these numbers comes opposite an indicator and this number gives accurately the percentage of gas in air which the patient is receiving.

The machine is attached to a large wheeled stand holding 2 by 200 gallon gas cylinders for hospital use, or it fits into a convenient case (Fig. 1) with 2 by 100 gallon cylinders, to make a portable apparatus weighing about 30 lb.

II

The second apparatus (Figs. 3 and 4), made by the Dental Manufacturing Com-

pany, is extremely simple in design. Here the machine can be separated from the stand and cylinders simply by unscrewing one nut Z on the coupling between the cylinders. The gas from the cylinders flows into a reducing chamber A, where the pressure is reduced to $\frac{1}{2}$ lb. per sq. in. by means of a rubber diaphragm controlling a needle valve. At the top of chamber A is an adjusting screw R enclosed in a screwed-on cap and the pressure in the chamber can be varied by turning the screw R. The percentage of gas in air is proportional to the gas pressure in A.

The needle of the gauge in front of the chamber A shows at what pressure the apparatus is working. The optimal pressure for the average case has been found to be $\frac{1}{2}$ lb. per sq. in. and the gauge is lettered accordingly. The gas from chamber A then passes through a carburettor E, designed specially for gas-and-air work by Mr. A. L. Bird, of Cambridge University Engineering Laboratories, and the gas flow is controlled by a float which rises sucking in a mixture of gas-and-air through appropriate inlets when the patient inspires. When the patient takes a deep breath the float rises and gas flows from chamber A into E; the pressure on the diaphragms contained in A is reduced, causing a needle valve in A to rise and allow gas to flow into A. On the patient ceasing to inspire, the whole flow of gas is cut off by the float in E falling into position, closing the gas and air ports, stopping the flow of gas by increasing the pressure of the diaphragm in A and thus closing the needle valve. On the tubing which leads to the face-piece is a safety valve which blows off at 3 lb. per sq. in. in the event of the pressure rising too high from any cause.

The machine is screwed to the stand at the joint Z, and this stand holds two 15 in. straight-valved 100 gallon

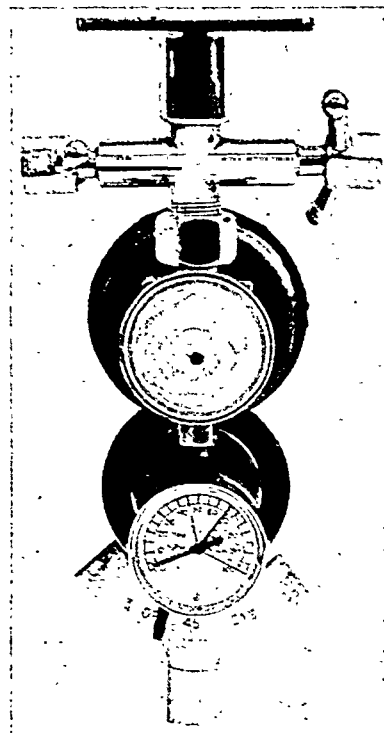


FIG. 2.—Mechanical part of the same apparatus, weighing 5-6 lb., removed from the case.

¹ THE LANCET, 1934, I., 519, 1278.

gas cylinders held in position by rings and thumb screws. These cylinders are fitted with clip-on labels "FULL" and "IN USE," to avoid confusion.

At the Wellhouse Hospital we have tested carefully all three of the machines described, and we find that each gives satisfactory results in use. The

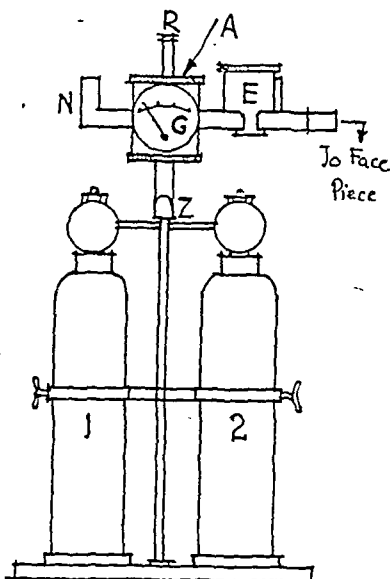


FIG. 3.—Sketch of the Dental Manufacturing Co.'s portable gas-and-air apparatus, with two 100-gallon gas cylinders in a cheap metal stand.

individual user must decide which apparatus to choose. To produce an apparatus which will give to the patient a mixture of gas-and-air requires some little skill and ingenuity; but to give to the world a solution of a problem which has baffled mankind since the beginning of time is something of which any man may well be proud. And this is Dr. Minnitt's achievement.

I cannot conclude this technical note with-

out dealing briefly with the two difficulties which have been held to lie in the way of the full development of the method—namely, the competence of the midwives to administer gas-and-air analgesia, and the cost of the gas itself. Here at the Wellhouse Hospital the midwives are in fact administering the analgesia,

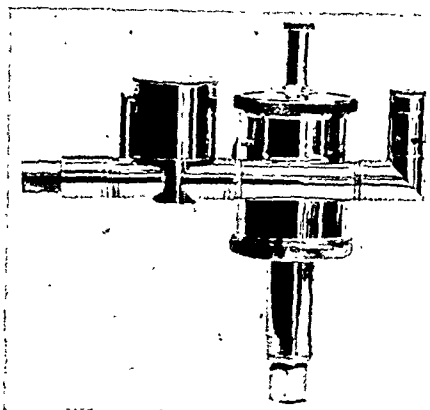


FIG. 4.—Mechanical part of the same apparatus, unscrewed from the rest, and viewed from behind.

long the natural course of labour, but in our work here we have seen no evidence of such prolongation by gas-and-air analgesia. The cost of the gas is another consideration. Widely variant estimates have been given, but here the cost is working out at about 2s. per case, possibly a little less, and there are, I think, few women who will not be glad to pay (say) 2s. 6d. for the relief they obtain.

The lettered diagrams have been kindly prepared for me by Mr. H. G. Warren.

MATERNAL MORTALITY

A DISCUSSION BY THE FELLOWSHIP OF MEDICINE

On Nov. 13th the Fellowship of Medicine promoted a debate on the motion

That the Present Rate of Maternal Mortality is a Discredit to Modern Obstetrics

The debate was held in the Barnes Hall of the Royal Society of Medicine and the chair was occupied by Dr. T. WATTS EDEN.

AFFIRMATIVE

Dame JANET CAMPBELL (late Ministry of Health), opening in the affirmative, explained that she was speaking as a public health officer rather than as an obstetrician, which latter she did not claim to be. The association between the public health service and obstetrics was a comparatively recent one, and was the result of an attempt to solve the question of infant mortality. This had led the health service and the Ministry into clinical country, and the concern of both now was to improve the midwifery service generally. Dame Janet complained that the public health service had not received from the obstetric speciality the support it had the right to expect; the initiative ought to have come from the latter, as the reduction of maternal mortality was primarily a clinical problem. Childbirth was physiological, it only occasionally became pathological; if

obstetricians had been less fully occupied with the abnormal, more attention would have been devoted to the great bulk of midwifery work—namely, the normal. The importance would then have been realised of securing skilled treatment whenever needed. Obstetricians acquiesced far too long in their speciality being regarded as a cinderella subject, an attitude which must have had its effect on the outlook of students and practitioners. If senior members of the profession did not take much interest in it, if extern midwifery was done in a haphazard way, and if little attention was paid to prenatal and postnatal work, one could scarcely expect that childbirth would be given the high place it deserved. Unfortunate too was the tardy recognition of the value of the competent midwife; only now was it realised how much better it would be to give her a share in the responsibility for her cases. The present position of postnatal care left much room for criticism. In the matter of analgesia during delivery, the speciality had been slow to move, and only under the pressure of lay opinion. There should be relief of pain for the poor as well as for the well-to-do woman. Lastly, the profession should have directed attention to the wide prevalence of puerperal sepsis; doctors should regard such cases more seriously than they now did.

Prof. MUNRO KERR (Glasgow), though supporting the opener, was not able to subscribe to the term "discredit"; he submitted that even before public health took obstetrics under its care, those responsible

for this work already did a great deal of teaching. He claimed that deaths during pregnancy and childbirth were mainly due to faults in antenatal and intranatal care; the women themselves were often to blame. Specialists, he thought, were doing too many Cæsarean sections and inductions of labour; some, on finding some slight abnormality, carried out one of those measures. He agreed with Dame Janet that if the profession had taken up midwives earlier, this country would now have been producing returns equal to those of Holland. The toll of childbearing women in this country was about 1 in every 200, but it varied a good deal with the district. It was a platitude that childbirth was a physiological process; he preferred to regard every pregnant woman as suspect, as she always held pathological possibilities. In a general way it could be said that these deaths occurred largely because of neglect to take the adequate measures available to prevent them. The problem in densely populated urban areas was very different from that in rural districts, and it was a great satisfaction to him to see Mr. Baldwin's announcement that a midwives' service was to be provided. Routine work should, he thought, be carried on by midwives, and local authorities should enrol a sufficient number of midwives as an integral part of their service, as was being done at Bradford. In densely peopled areas the family practitioner should, he thought, give up maternity work to the municipal midwives service, especially as practitioners now had a sufficiency ensured to them through a national insurance scheme.

NEGATIVE

Prof. GILBERT STRACHAN (Cardiff) remarked it was a wonder the word "disgrace" was not used in the motion; he thought Dame Janet had confused obstetricians with general practitioners. The obstetricians of the country were a mute army who were doing their particular work in every home in the land, and he objected to the idea that education in these matters had only followed pressure brought to bear from health authorities. Only one country in respect of which statistics were available had a lower maternal mortality than Britain—namely, Holland; yet the British figure was made a subject for condemnation. In the final report of the Departmental Committee it was pointed out that 50 per cent. of the deaths in childbirth were preventable, and that statement was re-echoed, generally with scare headlines, in most of the lay journals of the country. In New York the figure was 60 per cent. But such figures were liable to be misunderstood by the public and to be quoted in wholesale condemnation of medical practice. Meddlesome midwifery was the most important single cause of puerperal sepsis. Sixty per cent. or more of the midwifery of the country was done by midwives; when delay occurred the doctor was called in and on all hands he was conjured to "do something." Under a national maternity service abnormalities would be discovered and treated as early as possible. But maternity mortality was very complex, and what might be regarded as a certain remedy might fail in practice. Antenatal supervision had failed to reduce the mortality from puerperal sepsis. The whole question had been riddled with politics and every time blood-curdling statements were made about maternal mortality there was an increase of women who were in fear about themselves and came for reassurance.

Prof. DANIEL DOUGAL (Manchester) contended that the wording of the motion implied that modern

obstetrics had been responsible for so many deaths that it deserved to forfeit the confidence of the public; to approve of it would mean a vote of no confidence in those who were daily practising this arduous branch of medicine. Why should special attention be paid to mortality arising in obstetrics, when nothing of the kind was done in medicine and surgery? There were two reasons: (1) childbirth was a physiological process, and only incidentally did it become pathological; (2) the compulsory notification of births made it possible to calculate maternal mortality-rates more readily than those in general medicine and surgery. But the figure was misleading, because abortion and ectopic pregnancy were not included, though these accounted for 17 per cent. of the total. Avoidable deaths occurred in every branch of medicine, and official statistics were notoriously misleading. If the maternity mortality-rate was increasing, it must be due either to stricter notification or to some factors not recognised in past years. It was true that the Dutch figures were better than the British, but the inhabitants of Holland were agricultural and of good physique, as well as of placid temperament. The mortality in Britain could be reduced if all the causal factors were co-ordinated, but it was useless to talk of a first-class maternity service unless there was a readiness to pay for it. With regard to the place of obstetrics in the medical curriculum, obstetricians were apt to be out-voted in the faculty meetings. He submitted that the solution of this problem did not lie within the power of modern obstetrics alone; all the individuals and the authorities must play their part, and share in responsibility for failure.

DISCUSSION

The CHAIRMAN pointed out that the term "modern obstetrics" must be held to include all who were engaged in that service, and if anybody was to be blamed it must be all who were so engaged.

Dr. BETHEL SOLOMONS (Dublin) declared himself on the affirmative side. The medical student's present education did not fit him to practise when he was qualified; the regulations allowed him to do a certain number of confinements; they did not say he had to learn what normal labour was, and if he did not know that he could not be expected to be a judge as to an abnormal one. The student should be required to show that he had attended cases throughout, not merely towards the end. The best thing which had been done to reduce maternal mortality was to establish the College of Obstetricians. Membership of this body might well be made a criterion for appointments. Obstetrics, he was satisfied, was a beautiful science and art.

Mr. JAMES COOK (Glasgow) ranged himself against the resolution because it placed the profession in the dock. All that had been urged in support of that was the existence of a gulf between promise and performance. There were many other subjects which continued to baffle the profession. Many mothers would not take steps to ensure their safety. Among the causes of the present mortality-rate he enumerated the unborn child, the mother, the midwife, the general practitioner, institutions, the Ministry of Health, and the General Medical Council. He commended to the disputants a study of the Epistle of Paul to Philemon.

Dr. HAROLD E. WATKIN, speaking as a Lancashire practitioner, said he had brought into the world more than 3000 children, and had lost only three mothers. Disobedience was the cause of one of the

deaths, and interference from outside killed the other two. He sketched the kind of conditions in which his practice was carried on in the early days. He claimed that nowadays the younger 'practitioners' were in too great a hurry to get women delivered; they had not the necessary patience. In all his cases he insisted that no alcohol should be consumed, that there should be a daily evacuation of the bowels, and only a very small quantity of butcher's meat should be allowed.

Mr. J. T. HEWETSON (Birmingham) considered that the opener had begged the question; she did not so much make a definite charge as say if such and such things had been done the condition of affairs might have been better. Like Prof. Strachan, he deplored the fact that this had been made a political issue.

Dr. MARY KIDD (St. Leonards-on-Sea), who spoke for the motion, praised the work done by the Ministry of Health in the last 17 years. She would like to see anaesthetics much more largely used in obstetric practice; the Departmental Committee found that an appreciable cause of death in childbirth was obstetric shock; many medical men and women would agree that shock was largely due to the withholding of anaesthetics.

Sir HENRY BRACKENBURY (London) said that every one of the thirteen items of the opener's indictment had been true at some time; he believed that nearly all of them were true when he was a student, but few of them were true now. He did not agree with Dame Janet that the problem under discussion was primarily clinical; it was primarily a sociological one. Many had been pointing out for a long time that the maternal mortality was a matter of widespread national importance, but only comparatively recently had the Ministry of Health taken notice of it. The reason for the high national mortality in certain regions of the country was probably to be found in the habits and circumstances of the people.

Dr. COLIN CAMERON spoke as a country practitioner whose nearest hospital was 19 miles distant, and who often had to conduct a case by the light of a candle. Midwifery was not all it might be; one cause of risk was that too many cooks were stirring the broth. The country nurse might stop on her way to a midwifery case to attend a septic one. He spoke with gratitude of the readiness of specialists to make long journeys to help in case of difficulty.

Dr. J. R. BIBBY (Gloucester) disagreed with the motion. In Gloucester the maternal mortality was remarkably low; in ten years there were 5410 deliveries with only 2 deaths. The women attending the cases were all trained and had become midwives afterwards. Doctors had been called in 1500 times. The most important part of the service to tackle was the mother herself; many of them did not take their confinement with enough seriousness.

REPLIES

Prof. STRACHAN wished to remove any impression that Prof. Dougal and he were complacent about the present rate of mortality; but that was a different matter from being content with the criticisms levelled at their work. He had been surprised to hear Dr. Solomons say the student was not taught to understand normal labour; the student could not be taught more than fundamentals. Dr. Kidd was, he thought, misinformed about shock.

Dame JANET repeated her contention that the problem was mainly clinical, not sociological; the educational drive which had given such brilliant results at Rochdale has raised the standard all round.

The CHAIRMAN recalled the statement made in debate that one main cause of the high maternity mortality-rate was unnecessary interference. Was that, he asked, a creditable state of affairs to modern obstetrics? There was no reason to be enthusiastic about the present state of things, but he deprecated any tendency to blame one or other member of what was really a team.

On the motion being put there were:—

For the motion	..	..	61
Against	..	..	63

BRITISH ORTHOPÆDIC ASSOCIATION

THIS association held its annual meeting in Manchester on Oct. 25th and 26th under the presidency of Mr. HARRY PLATT. The opening morning was devoted to a discussion on

Fractures of the Os Calcis

The subject was considered from three aspects:—

1. *Economic results*, presented by Mr. BRYAN MCFARLAND and Mr. W. J. EASTWOOD of Liverpool, followed by Mr. J. P. HOSFORD, Mr. R. J. FURLONG, and Mr. T. T. STAMM of London. All the speakers agreed that the final result depended on whether the subastragaloid joint was disorganised or not. If it was not involved the functional result was usually excellent. Where the joint surfaces were disturbed permanent disability was likely for two reasons: (a) the development of a painful arthritis, and (b) the weakness of the calf muscles consequent on upward displacement of the posterior fragment of the os calcis. In the experience of the openers the type of treatment employed did not seem to have much influence on the ultimate function of the foot. In the few cases in which the powerful skeletal traction method advocated by Böhler of Vienna had been used to restore as far as possible the normal anatomy of the os calcis, it had not restored the patient to heavy labour any more successfully than simple manual moulding and fixation in plaster-of-Paris for several months. Nor had it shortened the time in which the patient could return to lighter occupations. The importance of factors other than methods of treatment was emphasised. These included the mental and physical condition of the injured person, his occupation, and the disturbing influence of the problems of compensation on his outlook.

2. *Results of Attempted Reduction in a Series of Recent Fractures*.—By invitation of the association, Dr. E. E. MYERS (Boston, U.S.A.) reviewed a consecutive series of 33 fractures involving the subastragaloid joint treated in the fracture services of the Ancoats Hospital and the Manchester Royal Infirmary. These were divided into two groups. (1) Eighteen fractures in which an attempt had been made, with varying success, to restore the normal anatomy of the os calcis by powerful skeletal traction and compression. More than half of this group of patients were able to return to their original arduous duties without subjective symptoms and with no appreciable impairment of the function of the foot. (2) Fifteen fractures treated only by manual manipulation and fixation in plaster-of-Paris. Of this group only a third of the patients were able to return to heavy work. Dr. Myers pointed out that the results were always better in the light, wiry type of person, and that in those patients who had achieved the best results the subastragaloid joint was clinically ankylosed. He concluded that a very definite advance

in the treatment of these fractures had been made by attempts to restore the normal anatomy of the foot, and suggested that in certain cases, after a reduction, early arthrodesis of the subastragaloid joint might be useful.

3. Treatment of Old Fractures.—Mr. R. OLLERENSHAW (Manchester) said that if a two-year period was allowed to elapse before a final analysis of these fractures was made, the general results were not so disheartening. Reviewing a series of 45 patients in all of whom the fractures were more than three years old, he had found that 34 had returned to their original work. For those who continue to complain of pain, his routine was to manipulate the foot into inversion and apply a plaster-of-Paris cast for several weeks. A very small number of old fractures required a subastragaloid arthrodesis, but this procedure could not always be relied upon to produce complete relief of symptoms.

Mr. A. H. TODD (London) recommended arthrodesis of the subastragaloid joint, and the mid-tarsal joint also if this was disorganised, after ordinary palliative methods had failed.

Bone Absorption : Osteochondritis

On the second morning the *mechanism of bone absorption* was discussed from the histological aspect by Prof. S. L. BAKER (Manchester) and from the radiological aspect by Dr. E. W. TWINING (Manchester). Prof. Baker, as a representative of the Schmorl-Turnbull school of bone pathology, maintained that bone resorption was an active cellular process in which bone was removed piecemeal by osteoclasts. In rickets and osteomalacia there is no evidence of removal of calcium salts from the bones; the pathological process is essentially a failure to calcify new bone formed during the course of these diseases, in other words, a hypocalcification and not a decalcification. He criticised the "osteolysis" theory of Leriche and Policard, who regard bone absorption as a "breaking down" of the bone into connective tissue without the aid of living cells—a process which they claim is seen particularly in Paget's disease and generalised osteitis fibrosa. Leriche and Policard admit that this process is often indistinguishable from bone formation, and Prof. Baker suggested that they had mistaken areas of coarse-fibred bone formation, which are common in Paget's disease and osteitis fibrosa, for areas of bone absorption. Thus there were two processes which could lead to diminished density of bone in radiograms:—

- (a) Hypocalcification which occurs in—
 - (1) Rickets and osteomalacia group of diseases;
 - (2) Rapidly forming coarse-fibred bone (no time for calcification or calcification delayed)—e.g., fracture callus.
- (b) Osteoclastic resorption, which accounts for all other examples of diminished bone density.

Dr. Twining agreed that so far as could be told from the X ray appearances, diminished bone density was due to actual loss of bony structure rather than to a mere removal of calcium.

Dr. M. F. JOHNSTONE (Manchester) reported 30 examples of *osteochondritis* occurring after manipulative reduction of congenital dislocation of the hip-joint in 224 children. The changes affected the femoral head and the acetabulum, and were exactly similar in X ray appearances and in the final result to those seen in pseudocoxalgia. The onset of osteochondritis did not appear to be determined by difficulties encountered in reduction.

Torticollis : Epicondylar Fractures

Mr. C. H. GRAY (Manchester) presented an analysis of 100 children between the ages of 1 and 14 years

treated for congenital torticollis. Of these 100 patients there had been difficulty in delivery in slightly over half of them. A sternomastoid "tumour" was noted in 23 babies only. In 50 both heads of the sternomastoid muscle were contracted. In discussing the results of treatment, Mr. Gray emphasised the importance of ocular anomalies. He pointed out that the eye on the affected side develops a point of false correspondence. After correction of the torticollis deformity this point no longer lies on the optical axis. To overcome this visual disturbance the child voluntarily replaces his head in the position of deformity.

Mr. Gray's contribution provoked considerable discussion as to the relative merits of the open *versus* the "closed" tenotomy of the contracted sternomastoid muscle. All speakers were agreed that prolonged and careful after-treatment was necessary to ensure complete and permanent correction of the deformity.

Mr. H. OSMOND CLARKE (Manchester) reviewed a series of 26 patients suffering from fractures of the *internal epicondyle* of the humerus with inclusion of the epicondyle in the elbow-joint. He pointed out that during the reduction of a complete posterolateral dislocation of the elbow-joint, the epicondyle may occasionally slip into the elbow-joint, but that this could be avoided by reasonable manipulative skill. More commonly, the epicondyle is torn off by a forcible abduction of the forearm on the arm which tears open the joint capsule on the mesial aspect. The epicondyle immediately enters the joint and maintains a state of lateral subluxation of the joint, which, in the absence of great swelling, can be appreciated by clinical examination. Ulnar nerve involvement of varying severity was the rule in this latter type of injury. The treatment advocated was open operation, for it allowed replacement of the epicondyle and transposition of the ulnar nerve to a safe intramuscular bed in front of the epicondyle.

Mr. OLLERENSHAW discussed the use of the *standard cinema films in case-recording*. He pointed out the many advantages of such films for demonstration and teaching purposes. Using a "cassette" camera, continuous records of a patient in all stages of his treatment could be made at any appropriate time, occupying only some 50 feet of film. Three films were shown, one of them portraying in colour the operative treatment of pes cavus, and providing very convincing evidence of the potentialities of the cinema in surgery.

MEDICINE AND THE LAW

Change of Hospital's Name and Objects

The story of the "National Anti-Vivisection and Battersea General Hospital," told in the recent proceedings in the Chancery Division, shows how the court on occasion can manage to vary the most fundamental of trusts.

According to Lord Ernest Hamilton's affidavit, it was in 1896 that a Mrs. Theodore Russell Munro opened a fund for subscriptions for a hospital to be conducted on antivivisectionist principles. Presently trustees were appointed to hold the £420 which had been subscribed and all future donations. In 1899 a site at Notting Hill seemed available. A deed at this period declared certain trusts. The hospital was to be known as the Anti-Vivisection Hospital; no experiments on living animals were to be permitted;

no person who might make such experiments or in any way encourage the practice of vivisection was to be allowed to take part as governor or manager or as member of the staff; all concerned must first sign a written declaration of opposition to such experiments; no one was to be appointed to the staff without signing a pledge that he or she would never perform any experiment, inoculation, or operation on living animals known as vivisection, would never aid or abet anybody else in so doing, and would never employ any remedies which could be "obtained only as the product of experiments on living animals such as antitoxin, pasteur antirabic virus and other like products." The Notting Hill scheme fell through, but at the end of 1900 the Battersea site was acquired for £7000 and was declared to be held on the trusts already mentioned except that the words "so long as he or she is connected with the hospital" were added to the pledge required of members of the staff. A board of management was elected at a meeting of subscribers and the hospital was opened in 1902. At the end of the year the annual report stated its objects and purposes. The hospital was declared to be established as a visible protest against the demoralising practice of vivisection; it was to be a public, charitable, and benevolent institution, and its primary object was the relief of human suffering by physicians and surgeons who were opposed to vivisection and who looked upon the result of its experiments as dangerous, misleading, and opposed to all true progress; the words "No vivisection on its staff, no vivisection in its schools, no experiments on patients" were always to be printed on the reports and appeals of the hospital. In 1908 the undertaking was incorporated under the Companies Act as "The Anti-Vivisection Hospital, The Battersea General Hospital (Incorporated)"; the memorandum and the articles of association repeated the previous declarations against experiments on animals. In later years adjacent houses were acquired to form a cancer research department, an out-patients' department was organised, and the whole premises were extended.

At the end of 1934 the excess of expenditure over income amounted to over £8000. The chairman's affidavit, dated last June, spoke of an unsecured debt of nearly £24,000 to the bank. The King Edward's Hospital Fund declined help and it was clear that the Battersea Hospital must either eliminate anti-vivisection from its name and objects or else must close its doors. It had already closed three wards, containing 100 beds, on grounds of economy. According to the affidavit, neither the chairman of the board of management nor the secretary of the hospital realised at this point that the corporate body was merely trustee of a charity and that the property and endowments of the hospital were subject to a charitable trust. When counsel's opinion was taken and the full facts were examined, the hospital was advised that, even if opposition to vivisection was a fundamental object of the company, the court had jurisdiction to confirm an alteration of the objects involving the abandonment of such opposition. Counsel advised an application to the court for a scheme "*cy près*." This law-French phrase means that when, from lapse of time or change of circumstances, it is no longer possible to carry out the donors' intention in the exact mode in which they directed, the court will allow the substitution of some variant purpose near to the original intention. Well-known examples in legal text-books explain themselves. A wood was once granted for providing timber to repair certain sea-

dykes; the sea gradually receded, dykes were no longer wanted, and the wood was entirely cut down; the court allowed the diversion of the land to other charitable purposes. Or, again, a man left funds for the relief of imprisoned debtors in Calcutta; imprisonment for debt was abolished in Calcutta, and the court applied the "*cy près*" doctrine to the disposal of the funds. In the case of the Battersea Hospital it could not be said that the objects had ceased to exist; the court was satisfied, however, that they had ceased to be practicable. It was stated that no other hospital in the country was conducted on similarly restrictive lines. Mr. Justice Eve made the necessary orders altering the name of the hospital and removing the restrictions from the trusts.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

AN annual meeting of fellows and members of the College was convened for Nov. 21st at 4 o'clock. As there was an attendance of only 23, excluding members of the council, there was no quorum, and an informal meeting was held with Sir Cuthbert Wallace, the president, in the chair, to discuss the matters on the agenda.

Reviewing the work of the year, the PRESIDENT spoke of Sir Holburt Waring's visit to Australia to open the Royal Australasian College of Surgeons, and of the primary fellowship examinations held there and in India. Similar examinations were to be held in Calcutta in December, and next year, he hoped, in Australia and New Zealand. The College's scholars had been working not only in London but also in the Buckston Browne Farm in Kent, which was a tremendous asset to the College. Important work had been done on shock, and the sympathetic system and intestinal obstruction were also being investigated. The prestige of the College in research was increasing.

Dr. C. L. BAYRESON had desired to move:—

"That this forty-sixth annual meeting of Fellows and Members of the Royal College of Surgeons of England again affirms that the Members, who constitute 90 per cent. of the College, should have some representation on the Council, a similar resolution having been passed 45 times and never once lost."

He was not able to do so owing to the informality of the meeting, but he set forth his reasons for placing the motion on the agenda. The fact that the proposal had been brought forward on so many occasions showed, he said, that the members felt strongly the justice of their cause. It would be an advantage to the council and to the College as a whole to have one or more members who would voice the views of their colleagues in general practice. The art of surgery was progressing: surely the constitution of the College should also progress.

Dr. RICHARD GILLBARD, in support, said that the general practitioners of the country, with all their ability, must have something of worth to contribute to the syllabus of education of the students who were destined to follow them. The council's attitude might possibly be dictated by fear lest any members elected to it would inevitably be the nominees of the British Medical Association. If the Association could obtain this representation it would be entitled to it, and in any case six members on the council could not exercise much power. He regarded the refusal of the council to give any reason or explanation of its non-

possumus attitude as discourteous and disrespectful to the members.

Dr. H. E. WATKINS said that students of the present day required more training in the schools than they received. The council must have noticed that for a considerable number of years the average mental quality of the students had been deteriorating. There were still brilliant men, but some of the younger general practitioners reached a very low standard. In his district there were half the births of 40 years ago and four times the septic cases.

Dr. HOWARD STRATFORD said that in three or four years this hoary and venerable resolution would have reached its golden jubilee and the press would take a great interest in it. The public would find with amusement and some annoyance that the farce had been proceeding for over fifty years. One day the suggestion would be adopted.

Dr. REDMOND ROCHE objected to the proposal of the council to join with other bodies in instituting a diploma in dietetics for non-medical persons. It was, he declared, against the public good that unqualified persons, under the guise, or disguise, of a diploma of the two Royal Colleges, should appear to be qualified to advise on matters of health. It was impossible for unqualified persons to decide whether an apparently healthy person was healthy or not; they could not detect early diabetes or renal disease, or recognise the idiosyncrasies of health. It was not mere fancy to suggest that these diplomates would not be content to play the rôle of skilled advisers on menus under medical direction. The new diplomates would undoubtedly intrude on the rights of the physician in dictating diets for individuals. The diploma would make another serious inroad upon strictly professional work, and it was the duty of the College to prevent, not encourage, this invasion. He suggested that the council should call a general meeting at which fellows and members could give their views.

The PRESIDENT, in reply, said that the subject had been carefully canvassed by the council and committee. The opinion of the College was rather against the Royal Colleges giving a diploma directly. It was no use however to say that they would not have dietitians; these were in existence. The University of London had started a course for the B.Sc. degree. He suggested that if dietitians must exist, it was better that they should have a nurse's training or hold the London B.Sc.

ERGOMETRINE AND ERGOTOCIN

THE QUESTION OF IDENTITY

IN March of this year we commented on the discovery by Dudley and Moir of ergometrine, a new active principle present in ergot, and referred also to ergotocin, a similar principle described by a group of workers from the University of Chicago.¹ Further observations on both these substances are now available, and the question whether they are identical or different substances deserves consideration. The late H. W. Dudley, in a paper published within a few days of his death, described very fully² the chemical characteristics of ergometrine and of several of its salts, and detailed descriptions of ergotocin have also been supplied.³ The outstanding discrepancy is in the empirical formula, for Kharasch and Legault assign a formula of $C_{21}H_{27}O_5N_3$ to ergotocin and Dudley a formula of $C_{19}H_{23}O_5N_3$ to ergometrine; in other chemical respects the substances are extremely similar and they have practically identical melting points. Dudley concludes that "ergotocin is in all probability identical with ergometrine." The pharmacological actions of ergotocin have recently been described by Davis, Adair, Chen, and Swanson⁴ and those of ergometrine by Brown and Dale.⁵ Those actions investigated by both sets of observers, with the exception of the effect on the cock's comb, are similar in every respect. Ergometrine caused cyanosis of the comb but did not lead to gangrene in a course of injections which with ergotocin produced extensive gangrene. Ergotocin, on the other hand, is said in this respect to be "more potent gram for gram than ergotocine." With this single exception, which may well be accounted for by differences in the way in which the experiments were carried out, the similarity between the two principles extends to detail; for example, both have a pressor effect when given to a spinal cat, but a depressor effect in the intact anaesthetised cat. The pressor effect of ergometrine is shown to be much less than that of the ergotocine group of alkaloids. It has only a trace of the specific paralysing action on motor effects characteristic of this group. The most important action, that on the uterus, is also the most characteristic action of ergometrine. It is the only action produced by small doses and consists in "the initiation of a long persistent rhythm of powerful contractions in a uterus normally quiescent as in the early puerperium." Brown and Dale at each stage in their investigation compare their findings on ergometrine with those of the Chicago workers on ergotocin, and the similarity in action is very obvious. They also point out the extreme difficulty of demonstrating the activity of ergometrine when present in crude extracts of ergot, except by observations on the uterus of the human patient, and this explains why ergometrine escaped recognition by the methods of experimental pharmacology for so many years.

The Chicago group of workers have just published a new study of ergotocin,⁶ in which they summarise their chemical and pharmacological results, and bring forward new clinical observations. It is unfortunate that they refer only in passing to the isolation of ergometrine, and that they do not compare their clinical findings with the original observations of Dudley and Moir.⁷ The action of ergotocin on the human puerperal uterus appears, however, to be identical with that of ergometrine as described by the British observers. The dose of ergometrine recommended by Dudley and Moir is larger than the dose of ergotocin used by the American workers who, however, state that their dose is minimal. The intravenous doses of ergotocin and ergometrine are in good agreement. Ergotocin is shown to have no detrimental effect on the blood pressure, pulse, or urinary output of patients. It has been given without ill-effect in the third stage of labour, and is stated to be more effective than any other known oxytocic drug. It is of special value in the treatment of post-partum hæmorrhage.

¹ Davis, Adair, Chen, and Swanson: Jour. Pharm., August, 1935, p. 398.

² Brown, G. L., and Dale, H. H.: Proc. Roy. Soc. B, October, 1935, p. 446.

³ Adair, Davis, Kharasch, and Legault: Amer. Jour. Obst. and Gyn., October, 1935, p. 466.

⁴ Dudley, H. W., and Moir, Chassar: Brit. Med. Jour., 1935, i., 1920.

⁵ THE LANCET, 1935, i., 687 and 758.

⁶ Dudley, H. W.: Proc. Roy. Soc. B, October, 1935, p. 478.

⁷ Kharasch, M. S., and Legault, R. R.: Jour. Amer. Chem. Soc., 1935, cxvii., 956 and 1140.

The place of ergometrine in clinical practice has recently been described by Moir.⁸ He concludes that ergometrine is likely to prove a valuable alternative to pituitary extract in the treatment of post-partum hæmorrhage, and he thinks it is worth trying in third-stage hæmorrhage when simple methods have failed, especially if the uterus is relaxed.

When all the evidence from chemical, pharmacological, and clinical sources is considered together, it is very difficult to believe that ergometrine and ergotocin are distinct substances. If they are indeed identical, the question arises of a single internationally recognised official name. The position is, however, complicated by the existence of two other substances each claiming to be the active principle of aqueous extract of ergot, but about which less information is available. Stoll and Burckhardt⁹ have described a substance with the same structural formula as ergometrine, extracted from ergot in a similar way and with similar chemical properties. This they have called ergobasine. Its pharmacological actions as described by Rothlin¹⁰ are essentially those of ergometrine, and it is almost certainly the same substance. It is less easy to place Thompson's^{11, 12} ergostetrine ("alkaloid X") as relatively few details of its chemical and pharmacological properties are given. It is, however, a similar principle although its toxicity in animals appears to be greater than that of ergometrine.

The isolation from ergot by Smith and Timmis¹³ of a substance isomeric with ergometrine may help to explain some of these discordant results. This substance, ergometrinine, is said to bear the same relationship to ergometrine as ergotoxine does to ergotocine. Its pharmacological properties have not yet been investigated and it probably will prove to be relatively inert, but its admixture with the pure principle may well account for minor discrepancies in the findings of different investigators.

The state of affairs with regard to these substances is very unsatisfactory, and there is a real danger that, as they become more widely used, the confusion in nomenclature may spread to the clinical field. The general position has been admirably summed up by Dale.¹⁴ It can hardly be disputed that Moir's observations published¹⁵ in 1932 afforded the original impetus to work in this field. As a direct outcome, Dudley and Moir isolated a new active principle and gave the first full and clear account of its chemical characteristics and clinical effects. Subsequent events have shown that this active principle, now well defined and fully investigated pharmacologically, is almost certainly the same as that to which other observers have given different names. Ergometrine would certainly appear, therefore, to have the strongest claims to official international recognition as the name for that active principle upon which the therapeutic action of ergot mainly depends.

⁸ Moir, C.: *Proc. Roy. Soc. Med.*, October, 1935, p. 165.

⁹ Stoll, A., and Burckhardt, E.: *Compt. rend. Acad. des Sci.*, 1935, cc., 680.

¹⁰ Rothlin, J.: *Compt. rend. Soc. de biol.*, 1935, cxix., 1302.

¹¹ Thompson, M. R.: *Jour. Amer. Pharm. Assoc.*, 1935, xxiv., 185.

¹² Thompson, M. R.: *Science*, 1935, lxxxii., 62.

¹³ Smith, S., and Timmis, G. M.: *Nature*, 1935, cxxxvi., 259.

¹⁴ Dale, H. H.: *Science*, 1935, lxxxii., 99.

¹⁵ Moir, C.: *Brit. Med. Jour.*, 1932, i., 1119.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

A PUBLIC MEDICAL SERVICE

As I reported at the time, the Edinburgh Public Medical Service was started in October, 1934, to meet the needs of the dependants of insured persons. The progress so far made was reviewed at a meeting last week, when Dr. John Young, who presided, said that the committee were quite satisfied with the result of the first year's working. The number of doctors in the service was 130, and during the year 3500 subscribers joined it, representing over 8000 people. The subscriptions were £3232, out of which the committee had to meet the expense of administration and the cost of prescribing. The latter proved to be heavy, amounting to 18.2 per cent. of the subscriptions received, whereas the figure under the National Health Insurance scheme was 14 per cent. The high cost was found to be due to the large number of scripts and not to expensive prescribing; 11,251 scripts were issued at a cost of £593, the average cost being about 1s. 0½d. The committee have been considering methods by which subscribers to the service may receive special treatment at reduced rates, and arrangements for special terms have been made with the radiologists in the city and with the National Ophthalmic Board.

An appeal is made to practitioners with small lists to do what they can to add suitable subscribers. The benefits which should ensue from this to the doctor are stated as follows: (1) The goodwill of his practice will become more valuable for he will have a saleable asset. (2) He is relieved of trouble and correspondence in connexion with the collection of small accounts, a proportion of which would otherwise probably be irrecoverable. (3) He can rely on receiving his payments quarterly. (4) He can pay calls on his patients when he happens to be in their district without making the patient think that he is running up an account. (5) The burden of the expense of administration will be reduced, and the doctor's remuneration thereby increased. (6) The doctors who have large lists are quite satisfied with the remuneration they had received during the first year. In a small list the law of average does not operate properly. (7) In comparing the Service with National Health Insurance practitioners should remember that they are freed from filling up various certificates and returns, and that no insurance committee or other Government department can interfere with them in the treatment of their patient.

PRISON REFORM

Improvements in the penal system were discussed by doctors and lawyers at a meeting recently arranged by the local branch of the National Council of Women and Edinburgh Women Citizens' Association, with Prof. D. K. Henderson in the chair. Dr. C. D. Bruce, medical superintendent of the Criminal Lunatic Department, Perth, who spoke first, pointed out that unless the antisocial attitude of the offender could be corrected during the term of imprisonment, he would again become a danger or at any rate a nuisance. He might be worse than before. Both the probation and the Borstal system had proved of great value. The policy in Scotland was to attempt to train the prisoner for citizenship. Training did not mean more comfort in the prison, but more effort by the prisoner—the building-up of character and self-respect. Mr. James Adair, procurator-fiscal, said that the courts could not

ROYAL BUCKINGHAMSHIRE HOSPITAL.—On Nov. 21st Mrs. Bernard laid the foundation-stone of the extensions to this institution. The committee is hoping to raise £50,000 for the extensions and £16,500 has been received. A new contributory scheme is being drawn up to give the hospital a continuous and regular income.

possibly wait until there had been the long examination necessary to decide how long the person was going to require for treatment or incarceration before he began to benefit. He thought it should be seriously considered whether all sentences should not be indeterminate. Such sentence having been pronounced, a committee of investigation should decide what was best for the particular prisoner. Sheriff-Principal Brown, K.C., referred to the distinction between the criminal and the delinquent. He spoke of the relief it would be if psychiatrists would say which were born bad and which had become so. Whatever the type of criminal, he always favoured kindness so far as that was possible with safety; but punishment was no use unless it hurt, and society had to be protected.

Dr. Angus MacNiven said that a person might be insane and yet perform a crime, know the nature of his act, and know that he was doing wrong. Whether he was guilty or not was a matter for the lawyers. Medical men could claim that once a person had been pronounced guilty, they should have something to say about treatment. He thought that they should be careful not to exaggerate the value of psychotherapy as a means of treating a criminal. Dr. W. R. D. Fairbairn described the present system as a failure. Short sentences were hopeless, and there was no place for prison at all unless the sentences were indeterminate. As a deterrent and reforming agency it was inefficient. What was important was research into the cause of crime. Dr. D. J. Forbes regarded high-grade mental defectives as a serious social danger.

IRELAND

(FROM OUR OWN CORRESPONDENT)

RESIGNATIONS IN THE SCHOOL OF PHYSIC

THE resignation of the dean of the faculty of physic, Dr. Andrew Francis Dixon, both from his post as dean and from the chair of anatomy in the University of Dublin, following closely on that of his colleague, Dr. Harold Pringle from the King's professorship of the institutes of medicine, has caused much regret to his colleagues, to his past and present pupils, and to the medical profession of Dublin. This regret is increased by the fact that in both cases the resignation has been brought about by reasons of health. Dixon, a pupil and assistant of Daniel John Cunningham, was professor of anatomy in Cardiff from 1897 to 1903, when he succeeded his old master in Dublin. Since then he has conducted the department of anatomy with ability and energy. For several years past he has also been dean of the faculty. He devoted himself to the interest of his pupils, kept in touch with them when they had gone out into the world, and was always the first to be visited when they returned to their old school. To his colleagues he was an elder brother whose wise counsel was sought and generously given whenever difficulties arose. Pringle was also a former student of the school in which he taught, having been a pupil of John Mallet Purser. He was appointed King's professor of the institutes of medicine in 1919, having held a lectureship in Edinburgh University for some years previously. He, too, was held in esteem and affection by his pupils and colleagues. It is unfortunate that the school of physic in Trinity College should be deprived of the heads of two of its important departments at the same moment. They carry with them to their retirement the affection and sympathy of all their colleagues and pupils.

PARIS

(FROM OUR OWN CORRESPONDENT)

THE FAMILY DOCTOR'S FORUM

THE "Assises de Médecine" is a movement started by Dr. Henri Godlewski for the pooling of medical observations by general practitioners throughout France, and not long ago he was able to tell the Academy of Medicine that his offspring has developed astonishingly since its birth in March, 1932. Already in April of the same year groups had been formed in a third of all the departments in France. The system adopted is to choose a certain subject some time in advance, to discuss it at local meetings, and then to submit the information thus collected to discussion at headquarters, at the Hôtel-Dieu in Paris. The first session of the "Assises de Médecine" dealt with rural tuberculosis and the means of combating it. The next subject was cancer houses. The subsequent subjects have been: regional clinical manifestations of alcoholism, the part played by domestic animals in human pathology, conjugal tuberculosis, the prevention of tetanus with serum, the prognosis in pleurisy, the incidence and present characteristics of syphilis, the prognosis in infantile convulsions, goitre in France, the present position of acute articular rheumatism, local dietetic customs, diphtheria, the prognosis in hyperpiesis, consanguinity and heredity, family predisposition to the localisation of disease, and the late results of lung collapse treatment. During the three years of its existence, the "Assises de Médecine" have held more than 500 scientific meetings. At every meeting at the Hôtel-Dieu a prize is awarded for the best scientific contribution; and the voting, which is secret, is usually unanimous in favour of the recipient of this prize. As Dr. Godlewski pointed out, the "Assises de Médecine" have done much to demonstrate the importance of the part played by the family doctor in preventive as well as in clinical medicine. It is the family doctor who can provide most information about the ultimate fate of the patient, particularly in those villages in which the medical succession is from father to son.

ROYAL DENTAL HOSPITAL

At this hospital's 26th annual clinical At Home, held last Saturday, a full and interesting programme had been arranged for the many visitors. The morning was devoted to demonstrations—surgical, orthodontic, and prosthetic. These included a routine operating session in the in-patient department of Charing Cross Hospital, with Mr. S. A. Ridett as operator and Dr. T. B. Vaile as anaesthetist, and operations under regional anaesthesia by Mr. S. F. St. J. Steadman in the Royal Dental Hospital. Mr. L. E. Claremont performed apical resection of teeth and Mr. H. L. Hardwick demonstrated the treatment of pyorrhoea by gingivectomy. A demonstration of orthodontic cases and their treatment was given by Miss K. C. Smyth, Mr. H. R. Evans, and Mr. J. H. Hovell. The complicated technique involved in the construction of porcelain jacket crowns was shown by Mr. W. I. Robertson, while Miss van Thal showed what can be done by speech training to children with cleft palate. The afternoon was devoted to clinical cases, and the hospital was filled almost to overflowing by old students and others. A large number of patients were present illustrating rare or instructive clinical conditions, such as cysts and tumours, supernumerary teeth, and deficiencies

in dentition. Others showed the results of various operations, some of which were remarkably good. Among them were examples of plastic surgery performed by Mr. T. P. Kilner in conjunction with members of the staff. One was a case of complete ankylosis of the jaws with an excellent functional result. Another had had an artificial sulcus made by means of an epithelial inlay which had enabled a lower denture to be worn with comfort and security. A series of patients for whom gingivectomy for pyorrhoea had been performed showed the value of this method in suitable cases. Several patients for whom students had made some beautiful porcelain jacket crowns were present; the work defied detection and reflected great credit both on the students and their teachers. There were also many children showing various forms of malocclusion both before and after treatment. Dr. Sydney Blackman exhibited a collection of radiograms so comprehensive that many visitors must have regretted that it could not be permanently on view at the hospital. He also gave a helpful lecture on conditions found in the apical maxillary incisor region and the technique which should be adopted to demonstrate this region radiographically. The John Hampton Hale research department was open, and the research workers, Messrs. Fish, Macgregor, Pincus, and Stewart-Ross, were present to explain the work on which they are engaged.

The annual dinner of past and present students was held at the Trocadero Restaurant on the same day with Mr. Herbert Smale in the chair and an attendance of over 150. The toast of the hospital and school was proposed by the chairman, who alluded to the honour which had befallen Dr. E. W. Fish who had been invited to give a course of lectures in Australia, and had received an honorary degree from the University of Sydney. Mr. H. Stobie, the dean, in his reply said that the school had increased in numbers, and the last entry was the best for many years. They welcomed on the staff Mr. B. W. Fickling, the third of his name to be associated with the hospital. The resignation of Miss Smyth from the post of orthodontic demonstrator was deeply regretted, for her services had been of great value. The number of students taking the B.D.S. was increasing, and it was hoped that now that the curriculum for this degree had been amended, more students would take a degree. The toast of the visitors was proposed by Mr. A. T. Pitts, and replied to by Colonel C. H. Howkins. Mr. F. Coleman proposed the toast of the chairman, which was drunk with musical honours.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. J. C. Kelly, D.S.C., to *Pembroke* for R.N.B.
Surg. Lt.-Comdr. W. A. Hopkins to *President* for course.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lts. E. G. Thomas and D. M. Craig to be Surg. Lt.-Comdrs.

W. I. D. Scott entered as Proby. Surg. Lt.
Surg. Sub-Lt. J. D. Lendrum to be Surg. Lt.
Proby. Surg. Lt. H. G. Rees to be Surg. Lt.
Proby. Surg. Sub-Lts. to be Surg. Sub-Lts.: M. D. Edwards, S. E. Cooke, and R. V. Jones.

ROYAL ARMY MEDICAL CORPS

Lt.-Cols. H. P. Hart, M.C., and T. T. H. Robinson, D.S.O., having attained the age for retirement, are placed on ret. pay.

Majs. E. Phillips, D.S.O., M.C., and S. D. Reid to be Lt.-Cols.

Short Service Commissions.—Lt. (on prob.) A. B. Dempsey is secd. under the provisions of Art. 213, Royal Warrant for Pay and Promotion, 1931. Oct. 28th, 1935.

SUPPLEMENTARY RESERVE OF OFFICERS

Capt. J. Morgan resigns his commn.
S. D. Loxton and W. H. Valentine to be Lts.

REGULAR ARMY RESERVE OF OFFICERS

Capt. I. S. Thomson, from the Supp. Res. of Off. R.A.M.C., to be Capt.

TERRITORIAL ARMY

Col. J. Taylor retires on account of ill-health and retains his rank, with permission to wear the prescribed uniform.

Cpts. T. J. C. MacDonald and F. Lishman resign their commns.

Lt. G. T. Pitts, from 97th (Kent Yeo.) Fd. Bde., R.A., to be Capt.

R. L. Harward (late Offr. Cadet, Univ. of Lond. Contgt. (Med. Unit), Sen. Div., O.T.C.) to be Lt.

The War Office announces that as a result of the conversion of seven infantry battalions of the 56th (1st London) and 47th (2nd London) Divisions to anti-aircraft units, the Army Council have decided to amalgamate these two divisions to form "The London Division," consisting of three infantry brigades and divisional troops. The headquarters of "The London Division" will be at Finsbury Barracks, City-road, E.C.1. The formation of the London Division will take effect from Dec. 15th, and its composition will be:—

1st (London) Infantry Brigade: Headquarters at Regimental Headquarters, Grenadier Guards, Birdcage-walk, S.W.1.

2nd (London) Infantry Brigade: Headquarters at Finsbury Barracks, City-road, E.C.1.

3rd (London) Infantry Brigade: Headquarters at Regimental Headquarters, Scots Guards, Birdcage-walk, S.W.1.

The Divisional Troops will include the Royal Army Medical Corps: 167th Field Ambulance, and the Army troops in the London Divisional Area will include the 13th General Hospital, 8th Hygiene Company.

ROYAL AIR FORCE

Wing Comdr. A. F. Rook to R.A.F. General Hospital, Palestine and Transjordan, Sarafand. For duty as Commanding Officer and Senior Medical Officer, Palestine and Transjordan, vice Wing Comdr. J. Rothwell.

Squadron Leader J. D'I. Rear to R.A.F. General Hospital, Hinaidi, Iraq, for duty as Medical Officer.

Flight Lts. J. S. Carslaw to Aircraft Depot, Karachi, India; R. E. W. Fisher to No. 31 (A.C.) Squadron, Karachi, India; and H. F. Harvey to No. 5 (Army Coöperation) Squadron, Chaklala, India.

Dental Branch.—Flight Lt. Roy Herbert Marthews to R.A.F. General Hospital, Hinaidi, Iraq. (Substituted for notice in THE LANCET last week.)

INDIAN MEDICAL SERVICE

Col. E. W. C. Bradfield, C.I.E., O.B.E., V.H.S., to be Maj.-Gen.

Lt.-Col. N. S. Sodhi, M.C., to be Col.

Examination for the F.R.C.S. in India.—At the request of the Director-General, I.M.S., the Council of the Royal College of Surgeons of England will again conduct the primary examination for the F.R.C.S. in India.

The examination, which will begin on Dec. 19th, is to be conducted at the Medical College, Calcutta, and 67 candidates have entered. The Royal College is sending out two examiners.

The anatomy examiner will be Mr. G. Gordon-Taylor, and he will be accompanied by Mr. H. H. Rew, director of examinations. Mr. L. M. Banerji, professor of surgery at Calcutta University, will be Mr. Gordon-Taylor's assessor. The examiner in physiology will be Dr. G. A. Buckmaster, emeritus professor of physiology in the University of Bristol. Capt. B. T. Krishnan, professor of physiology at Madras University, will act as his assessor.

DEATHS IN THE SERVICES

The death occurred on Nov. 22nd in London of Lt.-Col. EDWARD MAIR, I.M.S., retd. He was born in 1847 and joined the Service in March, 1874, was employed on military duty and in acting civil appointments till January, 1879, when he was appointed civil surgeon, Bijoor. He became jail superintendent at Jhansi and Benares, and in 1891 superintendent to the central jail at Bareilly. He acted as Inspector-General of Jails for North West Province in 1892 and for Bengal in 1898. He reached the rank of lieutenant-colonel in 1894 and retired in 1902.

GENERAL MEDICAL COUNCIL

PRESIDENT'S ADDRESS

At the opening of the 142nd session of the Council Sir Norman Walker began his presidential address by welcoming representatives of the Universities of Liverpool and Bristol in the persons of Mr. R. E. Kelly and Prof. R. J. Brocklehurst, who succeeded Prof. J. M. Beattie and Prof. E. Fawcett, a surgeon and a physiologist taking the places of a pathologist and an anatomist. He went on to say that the Lord President of the Council had approved in principle the proposal of an amending Bill to deal with (1) the election of direct representatives, (2) the recognition of public health diplomas granted other than in the United Kingdom, and (3) the publication of the British Pharmacopœia. Difficulties under the first heading did not press, since in normal course there would be no election before the autumn of 1938.

A Survey of Medical Education and Legislation

A number of the bodies and medical schools to which the interim report of the Curriculum Committee was circulated early in June had, said the President, sent in replies, but the majority desired more time to formulate their views. The replies were generally helpful and constructive. He would take the opportunity offered briefly to survey the position of medical education and legislation in this country, and particularly the relations of the Council to it.

During the earlier years of the nineteenth century there were many efforts to secure some better regulation of the practice of medicine, for it had become evident that something different from the limited rights and privileges conferred by Royal Charter, or by existing Acts of Parliament, on universities and medical corporations was required. In 1834 a committee of the House of Commons was appointed to inquire into the state of medical education and practice. This committee stated that "to produce some approach to uniformity there should be some superintending body to take cognisance of the manner in which the duty of examining is conducted."

In 1842 Sir James Graham, principal secretary of state for home affairs, circulated to the chartered medical bodies a printed paper containing the heads of a Bill proposed to be brought into Parliament for regulating the state of the medical profession throughout all parts of the United Kingdom. The census return of that date showed that there were about 34,000 persons practising one or more branches of medicine, and it was estimated that not more than 11,000 of these were "qualified." In the same year, Sir Robert Christison suggested the establishment of a Central Council of Health, consisting of H.M. principal secretaries of state, four persons, not professional, appointed by H.M. in Council, two from England, one each from Scotland and Ireland, and six representatives from the corporations and universities. It was clear that in the eighteen-forties and -fifties a good deal was going on behind the scenes, one section of opinion being in favour of a central body largely composed of laymen, in close relationship to the Government, another standing firm for the maintenance of the rights and privileges conferred on universities and colleges by Royal Charter or by legislative action (e.g., the Apothecaries Act, 1815) in many instances dating back hundreds of years. Nearly every session of Parliament from 1840 to 1868 saw the introduction of some Bill intended to establish a central medical authority which might undertake or supervise the urgently needed reforms.

THE 1858 ACT

No secret documents, said Sir Norman, had been found among the Council's papers, and all those

concerned were long dead, but the Medical Act, 1858, was, he surmised, in a sense an expression of the influence and status of the Chartered Bodies, and resulted in the establishment of a Council with rather vague and undefined powers, composed of one member from each of the Chartered Bodies, together with six members nominated by the Crown, with the Privy Council in the background. Sir John Simon had described the first Council as "a first timid experiment of the Legislature," adding that the powers of control given to it were far too small.

The preamble to the 1858 Act was clear enough about its object, but it was left to the Council to define what was a qualified practitioner. They began their work with great zeal, and first settled certain points regarding admission to the Register under Section 46. This section gave the Council authority to admit to the Register, in addition to those who held diplomas from any of the bodies named in Schedule (A) to the Act, and certain holders of foreign or colonial qualifications who were practising in the United Kingdom before the passing of the Act, any persons who had held appointments as surgeons or assistant surgeons in public services or charitable institutions, and also, so far as to the Council might seem expedient, medical students who had commenced their professional studies before the passing of the Act. They next turned attention to the British Pharmacopœia, and made arrangements for its production, and then at their fifth meeting, on Nov. 27th, 1858, they applied to all the bodies named in Schedule (A) for a statement (under Section 18 of the Act) of the courses of study and examinations to be gone through in order to obtain their respective qualifications.

A LOW STANDARD

At the second session, on August 3rd, 1859, the first committee on education was elected. The Council's first volume of minutes registered the opinion that the general education of the medical student should be controlled by national bodies (by which they meant the Government and the universities) and not directly by the newly established Council of Medical Education. There was abundant evidence that the prevailing standard left much to be desired, and the comments of the Admiralty on the low standard reached by some of the candidates for commissions in the Navy were candid and caustic. The returns for 1865, referring to twenty-one candidates, recorded that five candidates were utterly ignorant of Latin, the Latin of one was bad, while another was deficient in anatomy, surgery, and Latin. Five passed an indifferent examination, the manuscripts of four were indifferent or bad, and only four passed a good, and two a moderately good, examination. It had to be borne in mind that at that time admission to the new Medical Register was easy, and anyone who could show that he had held a medical appointment of any kind might be admitted.

As an example of the deep concern of the Council for education, Sir Norman recalled that on April 25th, 1864, the Council, after discussing routine business, resolved itself into a committee on education, and occupied seven of the twelve days of the session in discussing it. It was then decided (1) that the course of study was to be not less than four winter sessions, or three winter and two summer sessions; and evidence was to be produced that the remaining period of the four years had been spent in the acquisition of professional knowledge; (2) to view with approbation any encouragement held out by

the licensing bodies to students to prosecute the study of the natural sciences before they engaged in studies of a strictly professional character; (3) to recommend that the first examination be conducted partly in writing and partly *viva voce*, and that the second (final) examination be conducted partly in writing, partly *viva voce*, and as far as might be convenient and practicable, clinically.

AN ABORTIVE AMENDING BILL

In the minutes for 1874 appeared a draft of a proposed Bill to amend the Act of 1858 to the effect that no one should be entitled to be registered unless he was qualified both in medicine and in surgery, including midwifery. But the Bill contained more than that. There appeared in it for the first time the proposal that no registered practitioner should be entitled to hold any sort of official appointment unless, in addition to being duly qualified and registered (as was already required under Section 36 of the Act of 1858), he had also been examined and declared competent for such appointment by an examining board to be constituted under the Bill, and thereby entitled to append to his name on the Register the letters C.M.B., signifying Civil Medical Board. Three months after the passing of this Act, it was to be the duty of the General Medical Council to appoint a Civil Medical Board, consisting of five examiners from England, five from Ireland, and five from Scotland, whose duty it would be to examine all candidates presenting themselves, who were to have passed the double examination in medicine and surgery. A motion to approve this draft Bill was negatived by nineteen to two, three members not voting.

ROYAL COMMISSION OF 1880

In the years 1870-1881 no fewer than twenty Bills were brought in by private Members, in addition to three or four by the Government. The suggestion of a common Board of Examiners, or of three National Boards, had evidently made a strong appeal to some of the Parliamentary reformers; for more than half of the Bills presented contained provision for the establishment of such examining boards. In the 'seventies the Government of the day made at least three serious efforts at medical legislation, each of which was hampered by the opposition of some section of the medical profession. In 1880 the Government decided to refer the whole matter of amendment of the Medical Acts to a Royal Commission under the chairmanship of the Earl of Camperdown, which numbered amongst its membership the Bishop of Peterborough, the Master of the Rolls, Sir William Jenner, John Simon, T. H. Huxley, William Turner, and James (afterwards Viscount) Bryce.

The Royal Commission took evidence on 22 days, and examined 41 witnesses. They recommended the establishment of three divisional boards consisting of representatives from all the medical authorities in England, in Scotland, and in Ireland, each of which was to be responsible for conducting the only examination which would afford access to the Medical Register. The Council, which was to consist of 18 members (6 nominated by the Crown, 4 direct representatives (2 for England and 1 each for Scotland and Ireland) and 8 members to be chosen by the Divisional Boards (4 for England and 2 each for Scotland and Ireland)) was to have a general control over the divisional boards. The Medical Council was to be the sole licensing authority, and was to take proper steps to ensure, as far as possible, equality in curriculum and examination between the three divisional boards. To the divisional boards was to be entrusted the registration of students, and the full period of study was to be subsequent to registration.

THE 1886 ACT

It may well be asked, said Sir Norman, how is it that in the light of this report the 1886 Act is what it is? The explanation might be found in the text of the report itself. It was true that all the eleven members of the Commission signed the report as a whole, but to six of the eleven names was affixed an asterisk, directing attention to subjoined memoranda by the Bishop of Peterborough, Mr. Slater-Booth, John Simon, T. H. Huxley, William Turner, and James Bryce, expressing diversity of opinion on detail. In addition to their individual memoranda, John Simon and William Turner contributed a joint one.

The 1886 Act may not have been perfect from the medical point of view, but it established several new principles. No one could now be registered who had not passed a qualifying examination in medicine, surgery, and midwifery, and the system of approximately decennial inspections which it introduced was of equal value to the public and to this Council. Part II. of the Act greatly simplified the problem of colonial and foreign practitioners, and the first section of Part III. provided that if the G.M.C. failed in the discharge of its duties, the Privy Council might act in default. The same part also provided for the registration of diplomas in sanitary science, which to-day occupied so important a place in public health administration. It was a testimony to the effective results of the Act that whereas numbers of Acts were passed and Bills introduced to amend the 1858 Act, the Act of 1886 had remained almost untouched. Indeed since 1886 the Acts placed on record in the Medical Register were limited to six recognising the establishment of six new Universities, three Midwives Acts, the Dentists Act, 1921, and two Acts to meet certain difficulties in Ireland.

CONCLUSION

In almost all other countries, said the President, medical education was controlled more or less directly by the State; on this Council every licensing body had its representative to contribute his share to the consideration of every proposed change in medical education. Their duty was to ensure "that the standard required from candidates at the qualifying examinations shall be such as sufficiently to guarantee the possession of the knowledge and skill requisite for the efficient practice of medicine, surgery, and midwifery." The standard had steadily risen, and to-day was very different from that of 1886, largely owing to the action of those bodies who, not being satisfied with the minimum of a former day, devoted themselves to making their own qualifications better and more in accord with current knowledge. At intervals, as they were doing now, the Council carefully explored the position and set forth in resolutions and recommendations the nature and extent of the training they deemed to be "requisite." The elasticity of the system was one of its strongest characteristics. "We place efficiency," said Sir Norman, "before uniformity, and we have learned by the experience of seventy-seven years that sound reason is more effective than compulsion."

The customary vote of thanks to the President was proposed by Sir Farquhar Buzzard and seconded by Dr. E. K. le Fleming.

Two names were restored to the Dentists Register: Arthur Leonard Heath and James Alexander Randolph Allison. The Council then passed to the consideration of disciplinary cases.

POST-GRADUATE LECTURES

DURING the past few weeks we have published extracts from, or abstracts of, thirteen lectures given to post-graduates at autumn courses in the London teaching schools. The series ends with a fourteenth, delivered by Dr. Vilvandré to former students of the London Hospital.

RESULTS OF X RAY TREATMENT

(DR. G. E. VILVANDRÉ)

THIS lecture is addressed to those of you who may not have much experience in X ray treatment, or to those who have not thought it worth consideration. I have for many years tried to take a common-sense view of the subject, to stand aloof sometimes; and although I use X rays for treatment my aim is to speak without bias.

For many years Röntgen rays of short wavelength have been largely employed in treatment, but the valuable properties of long waves have not been neglected, especially by men of experience.

Acne vulgaris is a condition which does not always respond well to the usual skin applications nor to vaccine therapy, and in such cases X ray treatment in small doses has brought not only improvement but nearly always cure. A series of three treatments at a few weeks' interval has been the usual procedure. In *psoriasis* again, X rays will often benefit the patient and cause disappearance of the lesion, though they do not cure the disease. Here one must remember that prolonged treatment is inadvisable. Skin irritation is another troublesome condition that will often respond favourably; patients with pruritus vulvæ and pruritus ani may get much relief from a small dose or two; but here, of course, the underlying cause must always be sought as well.

Before leaving the skin I must also just mention *lupus vulgaris*, but only to warn you against the employment of X rays here. The skin clinic of the London Hospital contains numerous photographs of cases of lupus treated elsewhere in years gone by in which repeated application of small doses has led to epithelioma. For the same reason treatment of hirsute women should be left alone. The result of applying X rays for *hypertrichiosis*, whether facial or axillary, has been the development of telangiectases; and even X ray dermatitis might follow frequent or prolonged repeated applications. Once women have seen the effect of epilation they are only too anxious to have it repeated, and the only safe thing is not to start the treatment at all. So-called beauty parlours use this method to the danger of the public.

Before radium was seriously thought of, the London Hospital, under the guidance of Dr. Sequeira, was curing rodent ulcers with X rays; and the rodent ulcers of our younger days were usually of large size, having either been undiagnosed or else treated by remedies anything but beneficial. Rodent ulcers when removed surgically tend to recur in the scar, and radiation is always desirable after operation. Radium treatment, especially in the smaller lesions, often yields excellent results, but I have known heavy doses of X rays cure when radium has failed. Ten or twelve years ago I was also treating successfully big fast-growing facial nævi with X rays.

A man had carcinoma of the skin of his neck and sections were cut and the diagnosis definitely established. He received X ray treatment at my hands quite five

years ago and so far has shown no recurrence. I have kept in touch with him and my last interview was to examine his gall-bladder in which I found gall-stones. They were subsequently removed but his illness obviously had no connexion with the carcinoma of the neck and he is now quite well.

Now let us pass on to deeper structures.

The glands of *lymphadenoma*, whether of the neck or the abdomen or groin, respond readily to X rays and usually within two or three weeks a mass of glands will shrink when subjected to proper rays and filtration. One has to remember, however, that different forms of apparatus are needed to produce different kinds of rays; and let me add here that the possession of an X ray apparatus does not make a radiologist. Further, the different filtration of X rays leads to different results. In these days mathematically accurate dosage can be given.

Masses of glands (*lymphadenomatous masses*) at the hilum, sometimes involving one-third of the thorax, will disappear under treatment; but—and this is unfortunately an important “but”—X rays do not cure the disease. They make the patient comfortable, they relieve his dyspnoea and pain from pressure; but Hodgkin's disease goes on until bones or liver or kidneys are invaded. I often say that we have doubled the life of the Hodgkin's patient: before X rays they lasted two years; now we see patients alive four years and occasionally seven or eight years after the onset. Where anæmia is severe it is sometimes useful to give blood transfusions in conjunction with irradiation.

Sometimes real benefit will follow X ray treatment of large tuberculous glands in the neck, provided they are not caseous; but of course you cannot expect good results in a tuberculous patient whose home conditions are next door to starvation.

X ray therapy will reduce the size of an enlarged spleen but not cure the *myelogenous leukaemia* of which the patient is suffering; it will make him comfortable. When employed in the treatment of *actinomycosis*, where sinuses or inflamed masses (sometimes looked upon as cancerous) are present, real benefit will often follow; the sinuses dry up and the masses shrink.

Before coming to the wide use of X rays for carcinoma I may mention a case of *sarcoma* of the left sacro-iliac region which was operated upon and found to be irremovable eleven years ago. In those days we only had medium X ray therapy in use, but subsequently deep therapy came in and was employed with such effect that the patient is alive and working to-day. Similarly *mediastinal tumours* will sometimes disappear, certainly for years, after using “deep” X rays (short waves) given through several ports of entry. A spectacular, amazing result.

Real success has followed treatment of carcinoma of the thyroid, where a large mass, indurated and accompanied by malignant glands, is present. Even in cases where one or more secondary deposits have been evident in the lungs retrogression and even disappearance of the carcinoma has followed deep therapy. I am so convinced of its value in this particular disease that if I were unfortunate enough to fall a victim it would be my choice of treatment and I would be optimistic about the result.

On the other hand I have obtained bad results in *carcinoma of the antrum* or of the jaw. I have seen equally bad results with radium treatment, but I am not here to discuss radium treatment.

How far the presence of chronic sepsis in these regions is responsible for the failure I cannot say.

You will be told, or you may have read, from time to time that *carcinoma of the bronchus* is treated by deep therapy, but really the results have not been at all satisfactory. Personally I have seen no real improvement; although in one or two cases I have thought the patient was getting some benefit, the end has always been the same. The same applies to treatment of carcinoma of the oesophagus. Here some extravagant claims have been made, but in actual fact deep therapy has not been a success. At the same time we must beware of making too general a statement about the failure of X ray treatment, for two patients with carcinoma never behave alike.

More satisfactory have been the results with *carcinoma of the larynx*. Here the comparative superficial position of the neoplasm has rendered treatment more effective and both in France and in this country cures have been claimed; the treatment often results in the destruction of the thyroid cartilages, but that is perhaps a minor evil. At the London Hospital I have mostly had to deal with large masses of hard malignant glands in the neck, which are sent for deep therapy after a diagnosis of carcinoma in the upper air-passages or at some primary site not ascertained. But although I have often seen glands get smaller I have never been able to eliminate the disease; and personally I think it is rather a waste of time to treat large masses of carcinomatous glands in the neck.

Whereas I am never inclined to take on for treatment a case of malignant disease of the throat, tongue, pharynx, or larynx I never hesitate to welcome a case of *carcinoma of the breast*. I have come to the conclusion that I can always do some good in these cases. Many years ago with apparatus which was vastly different to that of to-day I had two striking cases, one in a woman of 65 and the other in a woman of 44.

The patient of 65 had a somewhat scirrhus type of carcinoma and after comparatively little treatment the whole thing disappeared, clinically. That it was not a case of mastitis was confirmed eight years later when the patient developed, in the same breast and in about the same region, a recurrence of the neoplasm. She died fairly soon after this but for eight years she had had no treatment and during that time there was no evidence of carcinoma of the breast.

The other case was more remarkable: it was an obvious carcinoma en peau d'orange. It was growing rapidly and glands in the axilla were invaded and she was sent to me by the surgeon as inoperable with the request for treatment. To my surprise and joy the whole thing cleared up after some months. This was eleven years ago, and I followed the case until two years ago when the patient was still well and in charge of a large department. She was in quite good health and there was no evidence of recurrence of the former trouble.

These are, of course, remarkable cases, and they are not usual results, but we must remember that the greater number of breast cases that come to the radiologist are inoperable or post-operative. Most of the post-operative cases which I am asked to treat are such as have developed recurrences either in the scar or in the glands of the supraclavicular region or the axilla. Others I am called upon to treat are people whose arm shows extensive oedema from pressure of malignant masses situated deeply in the axilla or the neck, or even as the result of secondaries in the chest; and although the outlook here seems hopeless a great deal of good can be done to some of the patients.

One patient had an inoperable scirrhus carcinoma of the breast with a great deal of induration and retraction of the nipple. The arm was painful because of its weight, and cumbersome. As the result of treatment, started about eighteen months ago, the arm has now reached almost normal size and the carcinoma, except for the scar, is not palpable. Where the best part of the breast was hard it has become soft and I think that the patient will live a good many years in comparative comfort.

In an inquiry made in 1931 I found that of the breast cases which received post-operative radiation to prevent recurrences about 25 per cent. were alive at the fourth year from starting X ray treatment. Not all of these were sent directly after operation. At ten years from operation the best figures obtained were 7 per cent. Such cases had been treated with a kilovoltage round about 100 with Coolidge tubes and filters of 4-6 mm. of aluminium, mostly the former. Some of the earliest cases which had remained alive many years exhibited damage, such as erosion of a costal cartilage. Telangiectases were extensive in some, but the patients had been alive 11 or 13 years after operation and had carried on their daily occupation. In none of them have I ever seen anything of a severe anaemia; nor to my knowledge has any patient I have ever treated with X rays developed an aplastic anaemia. My assistant O'Doherty and I took 12 cases of carcinoma which had received X ray treatment at 180 k.v., 4 m.a., and 0.5 or 1 mm. of copper and 2 mm. of aluminium for periods of one, two, and even three years, and found that in none of them was there anything of a severe anaemia, although they each had received many thousands of r units. The blood counts were made in the clinical laboratory of the London Hospital. Whatever radium may do as regards aplastic anaemia I have never seen really adverse blood changes from X rays. On the other hand, some subjects receiving prolonged doses have obviously improved in haemoglobin and red blood corpuscles even under X ray treatment when given iron and arsenic.

When inoperable carcinoma is present and subjected to X radiation the technique used will depend on the size of the breast and its firmness or otherwise. Tangential radiations may be used. I am not, however, prepared to place too much importance upon the damage said to be done by X rays to the lungs and pleura underlying the affected breast. Healthy tissues fortunately have the power to withstand big doses of radiation and probably some of the bad effects mentioned should be ascribed to secondary deposits in the pleura. The removal by operation of recurrences either of secondary glands or nodules is to be deprecated since it often causes general spread.

Among other conditions for which X ray treatment has been beneficial is *mastitis*, and I have also obtained really encouraging results in inoperable *carcinoma of the ovary*. In one case especially where the peritoneum was studded with secondary deposits the patient six months afterwards looks well and lives a happy life.

Lastly, X ray therapy is often useful in cases of *fibroids* and *metrorrhagia*. After a few doses a woman leading a useless invalid life, often blanched and without strength, will gradually recover good health and will be ever grateful for relief obtained without the mental anguish, pain, or fear sometimes associated with operation. Cases should, of course, be carefully selected and the decision reached upon the opinion of a physician or gynaecologist and the radiologist.

OBITUARY

DAN MCKENZIE, M.D. Glasg., F.R.C.S. Edin.

Dr. Dan McKenzie, who died at his home in Hampstead-lane on Nov. 19th at the age of nearly 66 years, was a well-known laryngologist and made a mark on his contemporaries by his forceful and resolute character. Daniel McKenzie was the son of William Stewart McKenzie, general practitioner and health officer at Larkhall, Lanarkshire, and was born there in January, 1870. He was educated at the local academies and at the Glasgow School, taking his medical course at Glasgow where he was medallist in several clinical subjects. After qualifying in 1891 he joined his father in practice in his native town where



DR. DAN MCKENZIE

(Photograph by Elliott & Fry)

he was parochial medical officer and certifying factory surgeon, and where he made a study of rheumatism and endemic goitre. At this time he married Dora Christine, second daughter of Sir John Benjamin Stone, scientist and traveller. Shortly after their marriage McKenzie moved south and settled at Leytonstone, still in general practice, although his interests were already turning in the direction of

laryngology. He became laryngologist to the Ilford Emergency Hospital and in 1906 restricted his practice to diseases of the nose and throat on appointment to the staff of the Central London Throat and Ear Hospital. He was then lecturing on otology at the Medical Graduate College. He took the F.R.C.S. Edin. in 1909 and became editor of the *Journal of Laryngology* two years later, finding time also to write on many aspects of his subject in the weekly medical journals. He translated Onodi's book on the Lacrymal Organs and brought out a little guide of his own to diagnosis in diseases of the throat, nose, and ear. Later he embodied the fruits of his experience in two large volumes entitled "Diseases of the Nose and Ear" (1921) which differed from other text-books by its more liberal construction of the sphere of the laryngologist. In his professional work he was broad-minded and rational, tolerant of new ideas, and ever ready to listen to the arguments of others.

Dan McKenzie was before everything a scholar and a poet. His mind was stored with great knowledge of history, folk-lore, especially the history of medicine, and at the same time attuned to rhythm and the beauty of words. These gifts he put freely at the disposal of one great cause. Long before the modern anti-noise movement began he had written "The City of Din," a tirade against noise which reads as though it was part of the most modern propaganda. The din in which dwellers in large cities are obliged to live would, he held, shatter the strongest nerves if a certain tolerance were not bred by habituation, and he hinted at the possible development of pro-

fective deafness in the men of the future. Thirteen years later McKenzie lectured for the Chadwick Trust on noise in relation to public health, in which he castigated unnecessary noise not only in the streets but inside the hospitals, which he thought hindered the recovery of the sick, and he appealed to hospital authorities to look into this matter with their nursing staffs. After this he naturally took his place as one of the founders of the Anti-Noise League.

A colleague writes: "The world is poorer by the death of Dr. Dan McKenzie who, while deservedly prominent in the active world of medicine, enriched the circle in which he revolved by his studies in social, legendary, and literary lore, while he adorned it in special by an outflow of poetry—sweet, sonorous, and essentially spontaneous. He was wonderfully alive to the suffering of his fellow men from the increasing amount of noise to which they were exposed, giving to it bright and essentially readable expression in 'The City of Din,' and using his remarkable power of declamatory utterance in the crusade against noise. His pen was that of a ready writer and, when employed on the subjects nearest to his heart, wielded a virile and persuasive phraseology. His essay on smell and the olfactory organs was issued under the euphonious title of 'Aromatics.' His poetic faculties found vent in various forms such as a little volume of love-lyrics entitled 'Romantics' and a number of tender effusions in broad Scots. McKenzie was an effective debater and with his commanding figure and powerful voice he was always able to gain an attentive hearing, and seldom failed to carry conviction. As a teacher he was superb and in his hospital work indefatigable. In his earlier days a little autocratic and apt to excite the antipathy of those under him, he became well loved and esteemed by colleagues, nursing staff, and, above all, by the humble sufferers in whose interest he never spared himself. His was certainly a remarkable character and occasional eccentricities of manner were far outweighed by the genial warmth of his disposition. Kindly, humorous, tolerant, it will be long before he is forgotten by his friends."

Dr. McKenzie is survived by his widow, one son, and one daughter.

ALFRED CUMMING GRANT, M.B. Glasg.

ON Nov. 18th there died in London Alfred Alexander Cumming Grant, who for many years had worked as a general practitioner in Soho and neighbourhood. His wide interests were reflected in the diversity of organisations to which he was official medical adviser: he acted as physician to a number of hotels, a chain of theatres, the central Y.M.C.A., a Catholic boys' school, several Jewish societies, and referee to a number of insurance companies. Born in 1852, he was third of the six sons of John Grant, crofter of Drumnadrochit in Glen Urquhart, and when he was about twenty he went to Glasgow where he supported himself by working in a drapery warehouse while studying first for his matriculation and later for his medical qualification. In 1894 he graduated as M.B., and thereafter was house surgeon at the Glasgow Maternity Hospital. After a period of private practice in Govan and several voyages to India as medical officer on ships of the Clan Line he came to London to set up the practice from which he retired only about three years ago. To all his patients he gave much, and from his poorer ones at

any rate he was rarely willing to receive anything. His own early life had made him sensitive to the difficulties of the poor, for his sympathy was both generous and practical. Dr. Grant was active in many of the Scottish societies in London and was chief of the Gaelic Society. His fine presence

marked him out as a man exceptional among his fellows.

Dr. Grant married Miss Alice Saunders who died some years ago. A funeral service for him was held at Crown Court Church, Drury-lane, and his ashes were sent back to the glen.

CORRESPONDENCE

'CONTRACEPTIVE METHODS

To the Editor of THE LANCET

SIR,—In July, 1934, the National Birth Control Association set up a subcommittee consisting of qualified medical men and women, most of whom are experienced in giving birth control instruction in clinics and in private practice. This committee, having analysed replies to a questionnaire which was sent to doctors throughout the country, and made an intensive study of the investigations that are being carried out by scientific workers on the chemical and biological aspects of contraception, has arrived at certain conclusions which may perhaps be of interest to your readers.

In the first place, there is a general consensus of opinion that to obtain maximum security against undesired pregnancy reliance should be placed on a combination of contraceptive methods rather than on any single device. Briefly, the combination should consist of (a) a mechanical barrier—a sheath or rubber pessary—between the semen and the cervix, and (b) a spermicidal agent. In view of the fact that rubber is damaged by fats, particularly by vaseline, non-fatty vehicles should be used for the spermicidal agents. Furthermore, as rubber is affected by heat, light, and time, all contraceptives should be kept cool and in the dark, and marked with the date of manufacture, and preferably also with the date beyond which they should not be used. A gelatin base is preferable for suppositories. Foaming tablets are not always reliable, as they depend for solution upon the vaginal moisture, the amount of which may vary within very wide limits. There is considerable evidence that quinine and Chinosol (oxy-quinoline sulphate) are unsatisfactory spermicides, and that they can act as local irritants. Their use as chemical contraceptives has in some cases been followed by constitutional toxic symptoms.

In view of the extravagant claims made by some manufacturers of contraceptives in their advertisements, the subcommittee wishes to emphasise the fact that no chemical contraceptive at present available offers as high an expectation of success as the combination of methods mentioned above.

There are now about a hundred birth control clinics (either voluntary or municipal) in the United Kingdom, and nearly all the medical officers of these have gained their experience in the first place by attendances at other clinics. If the instruction is expert, sufficient medical training can be obtained by attendances at one demonstration or lecture and three or four clinical sessions. For many practitioners, such an extended course may not be practicable, but those who wish to increase their knowledge of contraceptive technique can obtain names of publications intended for the general practitioner, and also particulars of training, demonstrations, and lectures, from the National Birth Control Association, 26, Eccleston-street, London, S.W.1.

In conclusion, the subcommittee wishes me to state that the data on which the opinions expressed

in this letter are based are available to any medical practitioner on application to the National Birth Control Association, which would for its part welcome information from practitioners as to their own experience.—I am, Sir, yours faithfully,

M. A. PYKE,

Secretary, National Birth Control Association.

Nov. 22nd.

PUERPERAL PYREXIA

To the Editor of THE LANCET

SIR,—If I read aright your article on puerperal pyrexia in your issue of Nov. 9th (p. 1087) you appear to infer in the last paragraph of the article that the medical officer of health of an autonomous area for maternity and child welfare need not send a copy of the notification of puerperal fever and pyrexia to the medical officer of health for the county. In my opinion, such an inference is wrong, because Article 5 of the Public Health (Notification of Puerperal Fever and Puerperal Pyrexia) Regulations, 1926, leaves no such loophole and intends that copies of all notifications shall be sent to the county medical officer of health—except, of course, in the case of county boroughs.

I am, Sir, yours faithfully,

A. T. POWELL,

Nov. 18th. Medical Officer of Health, Walthamstow.

* * * The smaller authorities for maternity and child welfare often are glad to delegate to the county authority the inspection of their midwives and notification of puerperal fever to the same authority is then essential. But the autonomous authorities are (with the exception of the county boroughs) also obliged to notify to the county authority, even though they inspect their own midwives and deal with their own cases of puerperal fever. The inference in the article that autonomous areas need not forward notifications to the county medical officer was not intended, and we are grateful to Dr. Powell for making the point clear.—ED. L.

MISSION HOSPITALS AT QUETTA.—The Church Missionary Society Hospital and the Church of England Missionary Zenana Hospital at Quetta were both destroyed in the earthquake and an appeal is being made for funds for the erection of a joint hospital. The societies have already collected nearly £4000, but £15,000 is needed.

HOSPITAL SAVING ASSOCIATION: ANNUAL REPORT. The number of contributors to this association has increased during the year by 162,781 and its income by £96,007. In the thirteenth annual report it is stated that the total distributions out of the year's income will bring payments made for hospital services up to the total of £3,574,781. The amount of contributions paid in was £844,429 and 409,192 contributors and dependents were treated at voluntary hospitals. The management expenses come to just over 7 per cent. of the contributions and the sum of £46,353 is available for final distribution to co-operating hospitals. With £5000 added from the reserve fund the total payment for hospital services during the year will be £642,552.

MEDICAL NEWS

University of Oxford

Next June an election will be made to the Schorstein research fellowship in medical science, which will be able for two years in any of the medical departments Oxford. Candidates must be graduates of the University holding a registrable medical qualification and must be under 35 years of age on Oct. 1st, 1936. Applications should reach the dean of the school of medicine, University Museum, not later than May 4th.

University of London

At a meeting of the senate held on Nov. 20th Mr. Eric Boyland, Ph.D., was appointed to a readership in biochemistry at the Cancer Hospital (Free), and Dr. V. B. Wigglesworth to a readership in entomology at the London School of Hygiene and Tropical Medicine.

Dr. Boyland, who was born in 1905, is a graduate of the University of Manchester, where he obtained his B.Sc. degree with first-class honours in applied chemistry in 1926, later proceeding to the M.Sc. and Ph.D. He held a Beit fellowship from 1929 until 1931, when he became physiological chemist at the research institute of the Cancer Hospital. His work includes observations in collaboration with Mrs. Boyland on the enzymes and metabolic activity of normal and cancer tissue, and his recent observations are summarised in the recent report of the British Empire Cancer Campaign.

Dr. Wigglesworth, who is 36 years of age, was educated at Epton and saw service in France in 1917-18. Entering Caius College, Cambridge, he was elected a scholar in 1921, and in the same year graduated B.A. In 1922 he was awarded the Rank Smart studentship, and till 1924 carried out work for the Board of Scientific and Industrial Research in the department of biochemistry of the University. In 1926 he graduated B.Chir., and in 1929 was awarded the Raymond Horton prize for his M.D. thesis. Since 1926 he has been lecturer and Milner research fellow in medical entomology at the London School of Hygiene and Tropical Medicine. He has published numerous papers and contributed a volume on insect physiology to Methuen's monographs on biological subjects.

Society of Medical Officers of Health

The Minister of Health and the late Chief Medical Officer to the Ministry sat on one or other side of Dr. W. G. Savage at the annual dinner of the Society of Medical Officers of Health on Nov. 22nd. Sir Kingsley Wood had been confirmed that day in his office of Minister and as speaking to his regional medical staff of plans for the future. Sir George Newman, revisiting the Society after an interval of 28 years, was summing up the story of his own endeavour as first medical officer to a united national health authority.

Sir Kingsley, in proposing the toast of The Society, coupled with the name of its president, Dr. Savage, said how glad he was to return to the Ministry of Health after his sojourn among the hills of Mount Pleasant, speaking of the growth of public health services in the last ten years he paid tribute to the work done by medical officers of health, especially in the maternity, child welfare, and tuberculosis services. He could rely, he knew, on the cordial co-operation of the Society in tackling the two most urgent public health problems of the day—maternal mortality and cancer, while he also looked forward to continued development of maternity and child welfare services, the encouragement of nursery schools, and an extension of the school medical service. Dr. Savage, in reply, admitted that the Society always endeavoured to stimulate the Ministry of Health. But their aim to promote the advance of public health in every branch was becoming increasingly difficult; to-day the perfect medical officer must be at once doctor, statistician, chemist, architect, pathologist, and popular lecturer. Would Sir Kingsley perhaps make a Golden Voice an additional condition of service?

Dr. G. F. Buchan proposed the health of Sir George Newman as colleague and friend. He praised his qualities as administrator, historian, master of English prose, and pioneer of preventive medicine, and hoped that his retirement would be one from which he would frequently emerge. In reply, Sir George said he was an exile returning to a society which he had joined 40 years ago. He thanked them for asking him to be their guest and remarked that the best reward of the public health worker was the approval of his colleagues. He spoke of early days at Whitehall when Sir Robert Morant, to whose work for the service he paid a tribute, had first instructed him in

the duties of a civil servant. He had taught him that as a medical officer of health he might do a score of things, but when he entered His Majesty's service he must follow the hidden pathway of the silent life. The reward of the civil servant's work would be not higher wages but more work. At the beginning and at the end he must remember he could receive no credit for a single-handed achievement; but if he received no credit, neither could he receive discredit, for both are the portion of the Minister. The public health service had increased the expectation of life, but there was little use, he added, in making life longer unless we also made it better, and that too was the task of this service.

Irish Medical Schools and Graduates' Association

The annual dinner of this association will be held at the Savoy Hotel, Strand, London, W.C., on Thursday, Dec. 5th, at 7.45 P.M.

Ministry of Pensions Nursing Service

Miss Margaret L. Hunter, matron of the Ministry of Pensions Hospital, Dunston Hill, has been appointed principal matron of this service in the place of Miss Helen G. Palin, who retires next March.

Aldrich-Blake Travelling Scholarship

The trustees of the Aldrich-Blake memorial fund will award a scholarship in 1936 to a medical woman graduate for the purpose of travel and study either in this country or abroad. Further particulars will be found in our advertisement columns.

Diploma in Psychological Medicine

A course of lectures and practical instruction for the D.P.M. will be held at the Maudsley Hospital, Denmark-hill, London, S.E., from January to May. It is divided into two parts and part one will begin on Jan. 6th. Further particulars may be had from Dr. F. Golla, honorary director of the medical school at the hospital.

Pharmaceutical Society of Great Britain

A meeting of this society will be held at the house of the society (17, Bloomsbury-square, London, W.C.), on Tuesday, Dec. 10th at 8.30 P.M. Mr. Percival Hartley, D.Sc., director of the department of biological standards at the National Institute for Medical Research, will give a lecture on international biological standards for drugs and therapeutic substances.

Grove Hospital, Tooting

To-day Friday, at 3.30 P.M., Mr. W. R. Owen is opening the new isolation block erected by the London County Council at this hospital. It is a two-storey building and provides accommodation for 60 patients in single-bedded wards which are separated by partly glazed screens with duty rooms placed so that the nurses will be able to keep the patients under observation.

Studentship in Oto-laryngology

A Bernhard Baron research studentship will shortly be vacant at the Ferens Institute of oto-laryngology at the Middlesex Hospital. The student will be expected to devote his whole time to research in connexion with the nose, throat, or ear, under the general direction of the two senior surgeons to the department. The fellowship is open to registered medical men of pure British descent, and applications should reach the school secretary, Middlesex Hospital, London, W.1, not later than Dec. 6th.

Fellowship of Medicine and Post-Graduate Medical Association

Special classes for M.R.C.P. candidates will be given at the Brompton Hospital in chest diseases twice weekly at 5 P.M. from Dec. 9th to Jan. 10th, and at the Victoria Park Hospital in diseases of the heart and lungs on Wednesdays and Fridays at 6 P.M. from Dec. 10th to Jan. 10th. Full information may be obtained from the secretary of the fellowship at 1, Wimpole-street, London, W.1.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery.—F. E. Bedell, St. Mary's Hosp.
Medicine.—E. E. LeFeuvre, St. Mary's Hosp.; and M. A. Partridge, Univ. of Oxf. and Guy's Hosp.
Forensic Medicine.—M. A. Partridge, Univ. of Oxf. and Guy's Hosp.
Midwifery.—H. Firman, Univ. of Manch.; O. A. L. Goode, Univ. of Leeds; N. R. James, London Hosp.; F. R. Neubert, Univ. of Liverp.; C. J. Roberts, Westminster Hosp.; G. N. Rodgers, Bombay and West London Hosp.; J. W. Thomas, Welsh National School of Medicine; and P. Tobin, Middlesex Hosp.

The following candidates, having completed the final examination, have been granted the diploma of the society entitling them to practise medicine, surgery, and midwifery: H. Firman, E. E. LeFeuvre, and F. R. Neubert.

Public Health Plans for Leicester

The Leicester health committee are planning many extensions in their work during the coming year. The centralisation of all departments in a new civic health centre will cost about £200,000 and extensions to the isolation hospital, which will give it from 140 to 200 additional beds, at least another £100,000. A new nurses' home to accommodate 300 nurses is needed and at the general hospital a new department to deal with the aged and senile.

Measles Prophylaxis in London

In view of the anticipated epidemic of measles in the coming winter the appropriate committee of the London County Council submitted on Tuesday a proposal to extend the existing service of blood donors. The value of adult serum in the prevention and attenuation of attacks of measles is accepted by the committee. A payment of 5s. is to be offered for a blood donation and the total cost during the epidemic is estimated at £250 for payments to donors and £100 for apparatus, the total not exceeding £350. The council accepted the recommendation.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 16TH, 1933

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2779; diphtheria, 1243; enteric fever, 30; acute pneumonia (primary or influenzal),* 762; puerperal fever, 36; puerperal pyrexia, 102; cerebro-spinal fever, 12; acute poliomyelitis, 14; encephalitis lethargica, 6; dysentery, 26; ophthalmia neonatorum, 64. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 22nd was 3250, which included: Scarlet fever, 1175; diphtheria, 1263; measles, 74; whooping-cough, 20; enteric fever, 20 mothers (plus 10 babies); poliomyelitis, 8. At St. Margaret's (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 26 (0) from measles, 1 (0) from scarlet fever, 15 (1) from whooping-cough, 28 (4) from diphtheria, 32 (12) from diarrhoea and enteritis under two years, and 31 (4) from influenza. The figures in parentheses are those for London itself.

Manchester reported 13 deaths from measles, Liverpool 5, Bootle 4, no other great town more than 1. Manchester also reported 3 deaths from whooping-cough, Liverpool 2, no other great town more than 1. Deaths from diphtheria were reported from 17 great towns, Liverpool 4, Sheffield 3, Southampton, Bradford, and Manchester each 2. The mortality from influenza is scattered over 25 great towns, only Manchester, Stockport, and Birmingham reporting 2 deaths; no other great town more than 1.

The number of stillbirths notified during the week was 279 (corresponding to a rate of 45 per 1000 total births), including 44 in London.

* Although the definition of the notifiable forms of pneumonia has not been changed, the Weekly Return in its summary of notifications has replaced the heading Acute pneumonia (primary or influenzal) with the single word Pneumonia.

A SURVEY OF NUTRITION

At the September meeting of the Assembly of the League of Nations the problem of nutrition in its relation to public health was referred to a committee. Mr. Bruce, High Commissioner for Australia, who moved the resolution, stated the essentials of the problem in his description of the paradox of the glutted market for the farmer and the insufficient nourishment in the "protective foodstuffs" of a substantial proportion of mankind. In this committee there was a challenging discussion which lasted for three days and in which 20 delegations took part. Delegates pressed the need for greater knowledge of the facts if schemes of nutrition are to be established on a scale adequate to affect the problem, and Australia's demand for an inquiry met with unanimous approval.

The Expert Commission on Nutrition meeting this week in London is the result of this resolution. Delegates are present as follows:—

FRANCE

Prof. L. ALQUIER, director of the Institute of Alimentary Hygiene, Paris.
 Dr. L. LAPICQUE, professor of physiology at the Sorbonne, Paris.

SCANDINAVIA

Prof. AXEL HÖJER, general director of the Medicinalstyrelsen, Stockholm.

UNITED KINGDOM

Dr. E. P. CATHCART, F.R.S., professor of physiology, Glasgow University.
 Dr. E. MELLANBY, F.R.S., secretary of the Medical Research Council.
 Sir JOHN ORR, F.R.S., director of the Imperial Bureau of Animal Nutrition, Aberdeen.

UNITED STATES OF AMERICA

Dr. E. V. McCOLLUM, professor of biochemistry, Johns Hopkins University, Baltimore.
 Prof. MARY S. ROSE, Columbia University, New York.
 Dr. W. SEBRELL, National Institute of Hygiene, Washington.

U.S.S.R.

Prof. SBARSKY, director of the Central Nutrition Institute, Moscow.

They are meeting at the London School of Hygiene and Tropical Medicine with Prof. Mellanby as chairman and Prof. McCollum as vice-chairman, and after a preliminary exchange of views they decided to draft a statement on scientific principles governing the dietaries of certain groups—namely, women during pregnancy and lactation, infants, school-children, and adolescents up to the age of 21. Two subcommittees have been set apart, one on energy-producing substances, under the chairmanship of Prof. Cathcart, with Dr. H. E. Magee, Ministry of Health, as secretary; the other on non-energy-producing substances, such as vitamins and salts, under the chairmanship of Prof. McCollum, with Miss Harriette Chick, D.Sc., Lister Institute, as secretary. These subcommittees are drawing up detailed recommendations to be submitted to a plenary session of the expert committee.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—The Prince of Wales has appointed Sir Ernest Pooley to be an hon. secretary of this fund.

Medical Diary

Information to be included in this column should reach us proper form on Tuesday, and cannot appear if it reaches later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.
TUESDAY, Dec. 3rd.

Orthopaedics. 5.30 P.M. (Cases at 4.30 P.M.) Mr. H. F. M. Moseley: The Results of a Large Group of Cases Treated Operatively for Recurrent Dislocation of the Shoulder. Mr. St. J. D. Buxton: Cases illustrating the Result of Tavernier's Operation. Mr. Norman Capener: Two Cases Treated by Nicola's Method. Mr. C. Lambriudi: Arthrodesis of the Toes.

Pathology. 8.30 P.M. P. Fildes: Tetanus Spores in Wood Wool. E. Christine Pillman-Williams: Gastric Acidity in Pregnancy. W. G. Barnard: The Lining Cells of the Lung Alveoli. T. H. C. Benians: The Effect of Congo Red on Plasma and Leucocytes. I. H. Maclean and W. A. Fleming: The Incidence of Toxicogenic Staphylococci in Normal People. L. B. Holt: The Antitoxin Response to Varying Doses of Staphylococcus Toxoid. R. J. V. Pulvertaft: Bacterial Fluorescence with Ultra-violet Light. The Nature of Decolorisation in Chloroma.

WEDNESDAY.

History of Medicine. 5 P.M. Dr. H. P. Bayon: The Precursors of William Harvey. Dr. J. F. Halls Dally: The Story of the Circulation in Harvey's Time and After.

Surgery. 8.30 P.M. Specimens illustrating morbid conditions of the breast will be shown.

THURSDAY.

Tropical Diseases and Parasitology. 8.15 P.M. Prof. D. Keilin: Hemoglobin and its Derivatives.

FRIDAY.

Otology. 10.30 A.M. (Cases at 9.30 A.M.) Mr. D. F. Duxward: The Facial Nerve and its Connections. Mr. E. H. Richards: Unexpected Sequelae to Aural Operations.

Laryngology. 5 P.M. (Cases at 4 P.M.) Discussion. Mr. F. Holt Diggle and Mr. T. E. Cawthorne: Treatment of Acute Frontal Sinusitis.

Anesthetics. 8.30 P.M. Dr. Stanley Rowbotham: Cyclopropane. (Dr. Rowbotham will demonstrate the use of Cyclopropane at the Cancer Hospital, Fulham-road, S.W., at 5 P.M.)

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Dec. 6th.—8.30 P.M. (De Vere Hotel, Kensington), Sir Bernard Spilsbury, Dr. Edwin Smith, Sir William Wilcoxon, and Judge Higgins: The Medical Witness.

SOCIETY OF CHEMICAL INDUSTRY.

London Section.

MONDAY, Dec. 2nd.—8 P.M. (Burlington House, Piccadilly, W.), Mr. J. Gibson: Industrial Disinfectants.

SOCIETY OF PUBLIC ANALYSTS.

WEDNESDAY, Dec. 4th.—8 P.M. (Chemical Society's Rooms, Burlington House, Piccadilly, W.), Short Communications.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF LONDON.

MONDAY, Dec. 2nd, WEDNESDAY, and THURSDAY.—5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel-street, W.C.), Major-General Sir John Megaw: Neglected Aspects of Public Health Work, with special reference to India.

FRIDAY.—5.30 P.M., Prof. F. W. Twort, F.R.S.: Modern Views of the Bacteriolytic Agents and their relation to Viruses.

CHADWICK PUBLIC LECTURE.

TUESDAY, Dec. 3rd.—8.15 P.M. (The Inner Temple Hall, E.C.), Mr. R. C. Maxwell: Town Planning and the Housing Act.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.1.

MONDAY, Dec. 2nd, to SATURDAY, Dec. 7th.—BROMPTON HOSPITAL, S.W.3. All-day course in thoracic surgery.—LONDON LOCK HOSPITAL, 91, Dean-street, W. Afternoon course in venereal disease.—INFANTS HOSPITAL, Vincent-square, S.W. Afternoon course in diseases of infants.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars, S.E. Afternoon course in dermatology.—Courses are open only to members of the fellowship.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

WEDNESDAY, Dec. 4th.—3 P.M. Visit to the Radiotherapeutic Department, Lambeth Hospital, Brook-street, S.E.11, with Dr. G. F. Stebbing.

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.

THURSDAY, Dec. 5th.—9 P.M., Mr. E. G. Muir: Visceral Tuberculosis.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.

WEDNESDAY, Dec. 4th.—Dr. A. Abrahams: Insomnia and other Disturbances of Sleep.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Dec. 2nd.—3.30 P.M., Dr. Greenfield: The Chemistry of the Cerebro-spinal Fluid (II.).

TUESDAY.—3.30 P.M., Dr. Critchley: Epilepsy and Allied Conditions.

WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. Walshe: The Motor System (IV.).

FRIDAY.—3.30 P.M., Dr. Gordon Holmes: Disorders of Vision (III.).

Out-patient clinic daily at 2 P.M.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Dec. 5th.—2 P.M., Dr. B. E. Schlesinger: Exanthemata. 3 P.M., Dr. D. N. Syphilis (II.).

at 10 A.M. and ward visits (except P.M.)

ROYAL INFIRMARY, Manchester.

TUESDAY, Dec. 3rd.—4.15 P.M., Dr. Crighton Bramwell: Diagnosis and Treatment of Cardiac Pain.

FRIDAY.—4.15 P.M., Mr. P. R. Wrigley: Demonstration of Surgical Cases.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Dec. 5th.—4.15 P.M., Clinical Meeting.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE EAR, NOSE, THROAT, AND CHEST, Deansgate, Manchester.

WEDNESDAY, Dec. 4th.—4.30 P.M., Dr. Simon Kelly: Affections of the Pleura.

ST. MARY'S HOSPITALS, Manchester.

THURSDAY, Dec. 5th.—4.15 P.M. (Whitworth-street West Hospital), Dr. Newton: Forceps.

GENERAL INFIRMARY, Leeds.

TUESDAY, Dec. 3rd.—3.30 P.M., Mr. W. Gough: Prolapse.

PUBLIC DISPENSARY AND HOSPITAL, Leeds.

WEDNESDAY, Dec. 4th.—4 P.M., Dr. S. J. Hartfall: Difficulties arising in the Treatment of Anæmia.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

WEDNESDAY, Dec. 4th.—4.15 P.M. (Victoria Infirmary), Dr. O. H. Mavor: Chronic Respiratory Disease.

Births, Marriages, and Deaths

BIRTHS

CAMPBELL.—On Nov. 9th, at a Rugby nursing-home, the wife of George Campbell, M.B. Oxon., of Wolston, Coventry, of a daughter.

HARE.—On Nov. 13th, at St. Albans, the wife of Tom Hare, M.D. Liverp., of a daughter.

HAYTHORNTHWAITHE.—On Nov. 22nd, at the West Herts Hospital, Hemel Hempstead, the wife of Captain R. A. Haythornthwaite, I.M.S., of King's Langley, Herts, of a son.

KAPP.—On Nov. 17th, at Croydon, to Dr. Dorothy Kapp (née Wilkins), wife of Prof. Reginald Kapp—a son.

PHILPS.—On Nov. 20th, at Beccles, the wife of Alan Philps, F.R.C.S. Eng., of a daughter.

SCOTT.—On Nov. 12th, at Ringwood, Hants, the wife of J. A. Easton Scott, B.M. Oxon., of a daughter.

RAWDON SMITH.—On Nov. 18th, at Liverpool, the wife of G. F. Rawdon Smith, M.D. Liverp., of a son.

WAKELEY.—On Nov. 23rd, the wife of Cecil P. G. Wakeley, D.Sc. Lond., F.R.C.S. Eng., of Queen Anne-street, W.1, of a son.

MARRIAGES

KENNERLEY-REYNOLDS.—On Nov. 16th, at St. Peter's Church, Harborne, Dr. T. A. S. Kennerley to Eleanor Judith, second daughter of Mr. and Mrs. J. H. Reynolds, of Harborne, Birmingham.

MANSELL-NEWBY-BARNES.—On Nov. 23rd, at St. Augustine's Church, Queen's Gate, S.W.7, Harry Edward Mansell, B.M. Oxon., M.R.C.P. Lond., eldest son of Dr. and Mrs. H. R. Mansell, of Hastings, to Jean, elder daughter of Mr. and Mrs. Robert Newby-Barnes, of South Milford, Yorkshire.

DEATHS

LELAND.—On Nov. 23rd, at Sloane-street, Alfred Burnet Leland, M.B., C.M. Edin.

MAIR.—On Nov. 22nd, at Matheson-road, W., Lieut.-Colonel Edward Mair, I.M.S. (retired).

NALL.—On Nov. 11th, suddenly, John Frederick Nall, M.D. Durh., F.R.C.S. Eng., at Torquay, late of Rahere, Clayfield, Brisbane, aged 72.

NASH-WORTHAM.—On Nov. 24th, at Bournemouth, Francis Leslie Dalton Nash-Wortham, F.R.C.S. Edin., late of Dorchester, aged 54.

STEWART.—On Nov. 22nd, at River-street, Johannesburg, William Stewart, M.R.C.S. Eng., M.I.E.E., aged 59.

WILCOX.—On Nov. 20th, at Salisbury, Robert Lewis Wilcox M.R.C.S. Eng., L.S.A., who practised 44 years in Westminster, aged 89 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

INFIBULATION

By JOHN M. MELLY, M.C., B.M., F.R.C.S. Edin.
PRINCIPAL MEDICAL OFFICER, BRITISH AMBULANCE
SERVICE IN ETHIOPIA

A CURIOUS surgical practice, which is almost universal among the natives of Somaliland, is that of female circumcision, or infibulation. To what era this custom dates back it is impossible to say; certainly the natives themselves have no light to throw on the origin of the practice. It has been handed down from time immemorial, and no female child is exempt. Although the custom is also found in Ethiopia, in parts to which the Somalis have penetrated, it is there often considerably modified in form. As performed in Somaliland proper, however, it is still an extensive surgical procedure.

The operation is not done in early infancy, as might be supposed, but when the child has reached her seventh year. The only reason I could elicit for this particular age choice is that up to seven years old the young girl may be considered fairly safe from male interference. Thus it would appear that the operation is postponed to as late a date as is socially advisable, with a view to the patient being capable of withstanding the shock and after-effects of the operation itself. This is probably the result of generations of experience, and justifies itself in the repeated denials of the native women that there is ever any resulting mortality—whether from hæmorrhage, sepsis, or any other cause.

The result aimed at, and usually more or less completely achieved, is the removal of the labia minora and the glans and body of the clitoris, and the subsequent closure by suture of the whole vulva with the exception of about 1 cm. posteriorly, opposite the vagina. The object is declared to be the insurance of virginity until marriage, when a second operation is performed to open up the orifice of the vagina sufficiently for marital purposes. Whether the removal of the nymphæ and clitoris is intended further to reduce the risk of premarital intercourse by diminishing sensation, or whether these amputations are employed with the sole object of obtaining raw surfaces for suture and closure, remains a matter for conjecture. Native opinion takes the attitude that this is the customary procedure, and it has apparently been unquestioningly adopted from one generation to another. It seems likely, however, that the details of the whole operation were in the beginning deliberately planned to ensure virginity both by lessening desire and by creating a definite physical obstruction to its fulfilment. The originators may have had an even longer vision and in incorporating the amputations perhaps had in view the discouragement of unfaithfulness in the future wives of the race—a sort of Somali chastity-belt. The efficacy of the operation in this respect there was no available means of gauging. Somalis are as reticent as more civilised peoples in admitting the indiscretions of their own wives, and probably correspondingly unreliable in claiming conquests over those of their neighbours.

Although I have never seen the operation performed, I was able to obtain a fairly detailed account of the procedure, and to examine a number of healed cases. There are one or more older women in each tribe who are skilled in the technique, and to these women the girls are taken when they are seven years old. The operation fee among the more civilised tribes is 2 rupees (about 3s.) but among the remoter tribes it is probably considerably less, and may there be paid in cattle, sheep, &c. A herb, or a concoction of herbs, which I was unable to identify, is applied to the parts before operation, and is declared to have a marked analgesic effect. As it is the women

themselves who affirm this, there is probably some truth in what they say. A somewhat crude knife is used and two curved incisions are made from the clitoris to the fourchette, completely severing the labia minora. The clitoris itself is then removed at the point where the body joins the crura. Finally the raw edges are sutured together with gut obtained from the intestine of the sheep and prepared by the natives themselves. Apparently hæmorrhage is adequately controlled by paste prepared from local herbs, again unidentified, which is thickly applied to the whole wound when the operation has been completed. A wood fire, which has been burning close at hand, is then raked away, and the patient placed for a few minutes in a sitting position on the hot ground. After-treatment is simple but based on sound principles. The legs are bound firmly together above and below the knees and at the ankles, and the child is kept in bed on a diet of camel's milk. After three days she is allowed to get up and move about as much as she is able. Since her legs are still tied together, this is accomplished with the aid of a pole which the patient holds in front of her with both hands, progressing in small jumps. After seven days the wound is considered to be healed and the legs are released.

That sepsis should supervene would, on the face of it, seem to be inevitable. The whole wound must be periodically infiltrated with urine, and when it is remembered that amongst the Somalis a smooth stone takes the place of toilet paper after defæcation, infection from that source, too, would appear probable. However, I was able to elicit no admission of this complication, and examination of the resultant wound in every case suggested healing by first intention.

The appearance of the healed wound shows the labia majora meeting in the midline in a clean scar about $\frac{1}{2}$ inch wide. The scar extends from the amputated clitoris anteriorly to within 1 cm. of the fourchette, where there is a circular opening into the vagina admitting the tip of the little finger. The whole effect produced was that of a clean operation skillfully performed under aseptic conditions.

The second operation is undertaken immediately before marriage, and in Somaliland is also performed by a woman of the tribe, though in Ethiopia, in the parts where infibulation is practised, the husband may prefer to do it himself. It consists in a simple incision, to whatever depth is considered adequate, along the full length of the old scar. The question of preoperative shaving of the operation area does not arise, as Somali women tolerate no pubic hair, and, while keeping their eyebrows intact, assiduously pluck the pubic growth.

The result of this second operation, in addition to widening the vaginal orifice, is to restore with unexpected completeness the normal external appearance of the vulva. The cleft between the labia majora reappears, though on parting the labia, the vestibule is found to be completely replaced by scar tissue.

Apparently it is not infrequently necessary to repeat the operation of infibulation on the same patient one or more times; not, it is averred, owing to failure of technique on the part of the operator, but owing to the natural weakness of the flesh of the patient concerned.

THE PARLIAMENTARY MEDICAL COMMITTEE.—In a note last week on Medical Men in Parliament reference was made to the fact that all the Members of Parliament who are medically qualified meet from time to time on a non-party basis to consider matters of special interest to public health and the practice of medicine. Of this Parliamentary Medical Committee Sir Francis Fremantle has for many years been the chairman and Dr. A. B. Howitt the secretary.

ADMINISTRATION OF THE CONVENTIONS ON TRAFFIC IN DANGEROUS DRUGS

In a report by the advisory committee on traffic in opium and other dangerous drugs recently presented to the League of Nations an interesting account is given of the method of working of the import and export certificate system whereby the international traffic in dangerous narcotics is controlled. The Hague Opium Convention of 1912, by articles 3, 5, and 13, contemplated the setting up of a system of "import certificate and export authorisation" and the advisory committee, with the approval of the Council and Assembly of the League adopted in 1921 the method in vogue in Great Britain during the late war. By the Geneva Convention of 1925 a legal obligation was imposed on an importing country to return the export authorisation to the government of the exporting country specifying the actual amounts of the narcotics which had been imported. By the same convention the coca leaf and Indian hemp were added to opium, its derivatives and cocaine to be subjected to the same traffic control. By the Limitation of Manufacture Convention of 1931 countries party to it, even if not parties to the previous conventions, are brought within the requirements of the import certificate system in respect of all drugs specified in Group I. of that convention as well as of those in Group II., except such as are in normal therapeutic use. By means of a model administrative code, supplemented by an explanatory graph, and a system of registration this rather complicated arrangement can be readily understood and effectively applied by any government which is willing, and indeed bound, to secure the limitation of the production and distribution of dangerous narcotics to legitimate and scientific purposes. The report concludes with a list of 72 countries indicating the conventions to which each country is party and the name and address of the authority in each country which is responsible for issuing import certificates and export authorisations.

CONTENT IN RETIREMENT

THE idea of retirement conjures up for one doctor a blissful vision, for another a horrid spectre, for a third grey monotony in contrast to the varied colours of a busy life. Even those who feel certain of their capacity, natural or acquired, to enjoy leisure are liable to become uneasy when they encounter the false heartiness characteristic of five-day members of the less expensive golf clubs. As a corrective to a gloomy outlook on retirement, we recommend Dr. Philip Gosse's account¹ of his happy country life with a collection of books, largely about pirates; pets, all cold-blooded; and such diversions as mushroom hunting and the promotion of the S.S.S.S. (Society for the Spread of Sticklebats in Sussex). Anecdotes are not wanting of the warm-blooded pets of the past: Gupworthy the badger, Miss Nosey Parker, a ringtail coatimundi, George, an Australian flying phalanger, and Greta the shrietch. But the pain of losing them proved more intense and lasting than the pleasures of friendship during their brief lives; and their successors are reptiles and fish, for, as Dr. Gosse truly says, you can never become deeply attached to a fish. All will enjoy this book, though some may pause to wonder whether its versatile author is really a fair sample of a doctor in retirement—whether, in fact, the notes are not those of a countryman whose excursions into medical study and practice were just episodes in a life conducted in a spirit of joyous adventure.

NEW PREPARATIONS

"HYPOLOID" HISTIDINE HYDROCHLORIDE, a product of Burroughs Wellcome and Co., Snow Hill Buildings, London, E.C.1, provides a sterile 4 per cent. solution of histidine hydrochloride suitable for

immediate use in cases of gastric or duodenal ulcer. This treatment is based on results obtained in 1933 by Aron and Weiss, who found that histidine and tryptophane prevented the formation of gastric ulcers in dogs whose duodenal digestion was surgically abolished. They suggested that peptic ulcers may be caused by amino-acid deficiency, and in our own columns a year ago E. Bulmer was able to confirm their observation that in human beings histidine injections are often followed by symptomatic cure of ulcer with removal of radiographic abnormalities. Subsequent writers have emphasised the harmlessness of the remedy, and the fact that, in mild cases at any rate, it can be given without special dieting or confining the patient to bed. The course recommended by Messrs. Burroughs Wellcome consists of 5 c.cm. of their preparation, by intramuscular or subcutaneous injection, daily for three weeks. "No other medication is necessary, and a minimum, if any, of dietary restrictions." Ampoules of 5 c.cm. are supplied in boxes of five.

COSOME (EPHETONIN COUGH SYRUP).—Ephetonin is a synthetic ephedrine prepared by E. Merck, of Darmstadt (London address: 37, Golden-square, W.1), and this firm has now put on the market a cough syrup in which it is associated with Dionin (ethyl-morphine hydrochloride) in the following mixture: ephetonin, 0.2 g.; dionin, 0.04 g.; syrup thymi comp., ad 100 c.cm. The last-named syrup has previously been recommended and used for some years in the treatment of cough, and its action, Messrs. Merck believe, is improved by the addition of ephetonin, to dilate bronchioles and promote expectoration, and of dionin to alleviate irritation and pain. Cosome is intended for the relief of all kinds of cough—especially whooping-cough—and its use is suggested as a preventive of post-operative pulmonary infections. The manufacturers claim that it never gives rise to side-symptoms or habituation.

PETROLAGAR WITH CASCARA.—Petrolagar is an emulsion of liquid paraffin with agar and is used as a laxative. The Petrolagar Laboratories (Braydon-road, London, N.16) have hitherto sold three varieties: (1) plain, (2) with phenolphthalein, and (3) alkaline. To these they now add a fourth petrolagar with cascara. It is described as combining "the mechanical softening action of petrolagar with the stimulating action of fluid extract of cascara sagrada," and each fluid ounce contains the equivalent of 61 minims of this extract. The exact composition, which includes (by weight) 62 per cent. of liquid paraffin and 14.7 per cent. of fluid extract of cascara, is stated on each bottle. The manufacturers have been successful in making a preparation which is pleasant to take. They suggest that it should be particularly useful for the relief of constipation in pregnancy.

PAR-ISALON.—This is a new remedy for bronchial asthma made by Dr. Joachim Wiernik A.-G. Berlin-Waidmannslust, and sold by Messrs. Coates and Cooper Ltd., 94, Clerkenwell-road, London, E.C.1. Isalon "Divag" is described as a substance belonging to the adrenaline series, and is said to have a bronchodilator action without any of the side-effects ascribed to adrenaline and ephedrine. In Par-Isalon it is mixed with theobromine, caffeine, and phenazone, with the idea of lessening other symptoms often associated with chronic asthma. It is taken by mouth. Favourable reports are quoted from Germany.

A LIFE OF EMIL AND KATE BEHNKE

Miss K. E. Behnke, 39, Earl's Court-square, London, S.W., writes: "I am writing a Life of my parents, Emil and Kate Behnke, whose research into vocal physiology and subsequent work in the scientific training of the voice, and the treatment of defects of speech, met with such cordial appreciation from, and close coöperation with, members of

¹ Go to the Country. By Philip Gosse. London: Cassell and Co., Ltd. 1935. Pp. 282. 8s. 6d.



the medical profession, amongst whom they counted so many warm friends. If any of these should have in their possession letters or information which they would allow me to incorporate in the biography I should be grateful for the loan of them. Every care would be taken of them and they would be returned in due course to the owners."

Appointments

COATES, J. F., M.D., M.R.C.P. Lond., has been appointed Senior Resident Medical Officer at the Victoria Hospital for Children, Chelsea.

ELLIS, RICHARD W. B., M.D. Camb., M.R.C.P. Lond., Assistant Physician to the Queen's Hospital for Children, Hackney

HERITAGE, KENNETH, M.S. Lond., F.R.C.S. Eng., Hon. Assistant Surgeon to the Princess Beatrice Hospital, London.

JAMES, S. G., Ch.M. Sydney, M.R.C.P. Lond., D.P.M., Deputy Medical Superintendent of the Rampton State Institution for Mental Defectives.

JONES, T. BRAMWELL, M.B. Camb., Resident Medical Officer to the Heritage Orthopaedic Hospitals, Chorley.

LANCKENAU, NELLIE I., M.D. Lond., Hon. Physician to the Department of Physical Medicine of the Prince of Wales's General Hospital, London.

MACKIE, E. GORDON, M.B. St. And., D.O.M.S., Hon. Ophthalmic Surgeon to the Sheffield Royal Hospital.

PARSONS, C. G., M.B., Resident Medical Officer and Medical Registrar at the General Hospital, Birmingham.

WHITWELL, G. P. B., M.D. Lond., Medical Officer at the Rampton State Institution for Mental Defectives.

Certifying Surgeons under the Factory and Workshop Acts:—
Dr. C. G. SHEROWIT (Stapleford District, Nottingham);
Dr. A. BURLINGHAM (Leiston District, Suffolk); Dr. R. A. CUMMING (Aberchirder District, Banff); Dr. F. ARMSTRONG (Rhondda (Treorchy) District of Glamorgan).

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Mental Hospital.—Sen. Asst. Physician.

Aldrich-Blake Memorial Trust, 8, Hunter-street, W.C.—Travelling Scholarship. 200 guineas.

Barnsley, Beckett Hospital and Dispensary.—H.P. £200.

Barry, Accident and Surgical Hospital.—H.S. At rate of £200.

Battersea General Hospital, Battersea Park, S.W.—H.S. Also H.P. At rate of £130 and £120 respectively.

Belfast, Royal Maternity Hospital.—Res. M.O. At rate of £52.

Bournemouth, Royal National Sanatorium for Consumption, &c. Asst. Res. M.O. £200.

Bradford, Royal Eye and Ear Hospital.—H.S. £160.

Brighton, Sanatorium and Infectious Disease Hospital.—Jun. Res. M.O. At rate of £250.

Brighton, Sussex Eye Hospital, Eastern-road.—H.S. At rate of £150.

Cardiff Royal Infirmary.—Gynaecological H.S. At rate of £50.

Colchester, Essex County Hospital.—Hon. Ophth. Surgeon.

Covenbury and Warwickshire Hospital.—Res. H.S. £125.

Dublin University.—Professorship of Physiology.

East Ham Memorial Hospital, Shrewsbury-road, E.—H.S. to Special Depts. and Cas. O. At rate of £120.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—H.P., three H.S.'s, Obstet. Asst. Each £50. Also Hon. Clin. Assts. to Med. and Surg. Out-patient Dept. and Skin Dept.

Exelina Hospital for Sick Children, Southwark, S.E.—H.S. £120.

Exminster, Devon Mental Hospital.—Jun. Asst. M.O. and Pathologist. £350.

Gloucestershire Royal Infirmary.—H.S. At rate of £150.

Hamstead General and N.W. London Hospital, Haverstock Hill, N.W.—H.S. At rate of £100.

Hastings, Royal East Sussex Hospital.—Jun. H.S. At rate of £150.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Surg. Reg. £100.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. H.P. Also Res. H.S. Each at rate of £100.

Hospital for Tropical Diseases, Gordon-street, W.C.—H.P. At rate of £120.

Hull Municipal Maternity Home and Infants Hospital.—Jun. Res. M.O. At rate of £100.

Ilford, King George Hospital.—Two H.P.'s. Also three H.S.'s. Each at rate of £100.

Inverness Royal Northern Infirmary.—Bacteriologist and Pathologist. £800.

King's College Hospital, Denmark Hill, S.E.—Asst. Hon. Anaesthetist.

Leeds Education Committee.—Asst. School M.O. £500.

Liverpool, Mill-road Infirmary.—Res. Asst. M.O. £200.

Liverpool, Walton Hospital.—Sen. Res. Asst. M.O. £350.

London Hospital, E.—Surg. first Assistant and Reg. £300. Also Hon. Asst. Anaesthetist.

London Lock Hospital, 233, Harrow-road, W.—Res. M.O. for Male Depts. At rate of £175. Also Surg. Reg. to Dean-street. £100.

Manchester, Ancoats Hospital.—Asst. Pathologist. £300.

Manchester Royal Infirmary.—Res. M.O. £200.

Manchester, St. Mary's Hospital.—H.S.'s for Special Hospitals. Each at rate of £50.

Marie Curie Hospital, 2, Fitzjohn's avenue, N.W.—Res. M.O. At rate of £100.

Maudsley Hospital, Denmark Hill, S.E.—Asst. M.O. £170.

Miller General Hospital, Greenwich-road, S.E.—Refractionist. 52 guineas.

Ministry of Health.—M.O.'s. Each £847.

Mitcham, Wilson Hospital.—Hon. Consulting Gynaecologist.

National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Two H.P.'s. Each £150. Also Visiting M.O. for Convalescent Home.

National Temperance Hospital, Hampstead-road, N.W.—Cas. O. At rate of £120.

Newcastle General Hospital.—Two H.S.'s. Each at rate of £150.

Newcastle-upon-Tyne City and County.—Asst. Maternity and Child Welfare M.O. £500.

Nottingham City.—Asst. M.O. for Maternity and Child Welfare Work. £500.

Nottingham General Hospital.—H.P. and H.S. Each at rate of £150.

Oxford, Christ Church Hospital.—H.S. £100.

Preston, County Mental Hospital, Whittingham.—Res. Jun. Asst. M.O. £500.

Princess Elizabeth of York Hospital for Children, Shadwell, E.—H.S. Also Cas. O. Each at rate of £125.

Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100. Also Dental Surgeon. £1 7s. 3d. per session.

Radium Institute, Riding House-street, W.—H.S. At rate of £150.

Rainhill, Lancs, County Mental Hospital.—Asst. M.O. £500.

Reading, Royal Berkshire Hospital.—H.S. At rate of £125.

Romford, Oldchurch Hospital.—Asst. Res. Surgeon. £500.

Royal Free Hospital, Gray's Inn-road, W.C.—Second H.S., Surg. Reg. £200. Res. Cas. O. At rate of £150. Dist. Obstet. Asst., Gynaecological Reg.; also Med. Reg. Each at rate of £100, and Res. Anaesthetist in Obstet. and Gyn. Unit at rate of £75.

Royal Northern Hospital, Holloway, N.—Hon. Radiologist.

St. Albans, Hill End Hospital, for Mental and Nervous Disorders. Fourth Asst. M.O. £350.

St. Bartholomew's Hospital, E.C.—Chief Asst. to X Ray Diagnostic Dept.

St. John's Hospital, Lewisham, S.E.—Res. Cas. O. At rate of £100.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—Res. Surg. O. At rate of £150. Also Clinical Assistantships for Out-patients' Depts.

St. Mary's Hospital for Women and Children, E.—Hon. Anaesthetist.

St. Peter's Hospital for Stone, &c., Henrietta-street, W.C.—Clin. Asst.

Salford Royal Hospital.—H.S. At rate of £125.

Salisbury General Infirmary.—H.P. At rate of £125.

Sheffield Royal Infirmary.—Clin. Asst. to Surgical Dept. At rate of £300.

Southampton Borough General Hospital.—Jun. Res. M.O. £200.

Staffordshire General Infirmary.—H.S. At rate of £200. Also H.P. and Cas. O. At rate of £150.

Surrey County Mental Hospital Service.—Three Asst. M.O.'s. Each £350.

Warwickshire County Council.—Asst. County M.O.H. £500.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Jun. Res. H.S. £100.

West Bromwich, Hallam Hospital.—Res. H.P. At rate of £200.

West London Hospital, Hammersmith-road, W.—Med. Reg. £250. Also H.P. and two H.S.'s. Each at rate of £100.

Westminster Hospital, Broad Sanctuary, S.W.—Clin. Asst. to Gynaecological Dept.

Weston-super-Mare General Hospital.—Res. H.S. £150.

Windsor, King Edward VII Hospital.—Three H.S.'s. Each at rate of £100.

Wolverhampton, New Cross Hospital and Institution.—Asst. Deputy M.O. £350.

Wolverhampton Royal Hospital.—H.S. At rate of £100.

Medical Referee under the Workmen's Compensation Act, 1925, for the Brentwood, Chelmsford, Colchester, Clacton and Halstead, Harwich and Maldon County Court District (Circuit No. 33). Applications should be addressed to the Private Secretary, Home Office, Whitehall, London, S.W.1. before Dec. 10th.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Westboughton (Lancashire); Lynton (Devon); Kirkintilloch (Dumbarton); and Bradford (Cleckheaton) (York, West Riding).

THE Berliner Akademie für aerztliche Fortbildung, Berlin, has asked us to announce a correction in their programme which we published last week. The course in radiology will be held from March 9th to 14th and not as stated.

ADDRESSES AND ORIGINAL ARTICLES

SURGICAL TREATMENT OF ANEURYSMS

By W. H. C. ROMANIS, M.B., M.Chir. Camb.,
F.R.C.S. Eng.

Surgeon to St. Thomas's Hospital and to the City of
London Hospital for Diseases of the Chest

My interest in the treatment of "surgical" aneurysms dates from a series of 35 cases of traumatic arterial and arteriovenous aneurysms with which I dealt in the few years immediately after the war, and in connexion with which I had the advantage of the advice and assistance of the late Sir George Makins. The cases described now are however a different series and are of wider general interest because they are all civilian cases and not war injuries.

The aneurysms essentially suitable for surgery are naturally those of the neck and limbs, and as a rough general rule it may be laid down that the nearer the trunk the aneurysm is, the more difficult and delicate is its operative treatment. The cases here described have all been treated by open surgical operation, though of course it is well known that certain aneurysms can be benefited by such other procedures as compression, needling, electrolysis, and general medical measures. A bewildering variety of operations have been practised for aneurysm in the past; such procedures as ligation of the main vessel just above, or some distance above the sac, distal ligation of the main vessel or of certain branches, ligation above and below the sac, and direct excision of the sac, having all been extensively practised, while Matas' suturing operations have occasionally been done. Some of the operations are invested with the historical romance of long antiquity, such as the operation of Antyllus. Nowadays there is little doubt that, if it can be performed, the formal operation of excision of the sac with ligation of all branches entering it, as close to the sac as possible, and non-interference with the accompanying vein, is the operation of choice. Often it is impossible, either because of the situation of the aneurysm, its size, its adherence, or the patient's age or weakness, but in many such cases a cure is obtainable by one of the other surgical procedures, the most promising being ligation of the main vessel immediately above the sac.

As is well known, most of these so-called peripheral aneurysms occur in the flexures of the limbs, either in the popliteal space, Scarpa's triangle, or the axilla. Many, but by no means all of them, are associated with injuries. They are far more common in men than in women, but when seen in women they are usually associated with a positive Wassermann reaction, whereas this is by no means always the case in men. Certain aneurysms of this kind are, or have in the past been, associated with certain trades, such as the popliteal aneurysm seen in post-boys, and femoral aneurysm seen in butchers as a result of stabs in the thigh from their knives while sharpening them. Others are seen as a direct or indirect result of surgical procedures; the best known instance of this was the brachial aneurysm in the antecubital fossa which so often occurred as a result of unskilled attempts at bleeding. In the present series there are two instances where the aneurysms can apparently be traced directly or indirectly to surgical operations.

ARTERIOVENOUS ANEURYSMS OF THE CAVERNOUS SINUS

These aneurysms to which I shall first refer are not extremely rare. They are usually the result of severe

injury to the base of the skull; quite commonly the cause is a kick by a horse on the jaw, as a result of which a crack runs across the region of the cavernous sinus and a communication is formed between the internal carotid artery and this sinus. Clinically the condition is unmistakable: the patient complains of a continuous loud, roaring noise in his ears, pulsating exophthalmos is present, the eyelids are engorged, purple, and congested with prominent veins, while oedema of the conjunctiva is often present. The characteristic "machinery" murmur, which consists of a loud, continuous roaring or buzzing, increased at every heart beat, can sometimes be heard without a stethoscope, while with a stethoscope it is exceedingly loud, all over the frontal region. It is usually heard loudest over the frontal sinus and eyelid on the side concerned. It may not be easy to settle on which side the aneurysm is until it is noticed that the murmur is stopped more or less completely by compressing the common carotid artery on the affected side, and it is usually made worse by compression on the other side.

Treatment of this condition consists in ligation of the internal carotid artery on the affected side; ligation of the common carotid alone is not sufficient, as the blood will continue to come down the external carotid and go up the internal carotid. Ligation either of both the common and external carotid, or of the internal carotid alone, must therefore be performed. The latter procedure is the best.

The following are 3 out of 5 cases which have been dealt with:—

CASE 1.—Male, aged 33. Had been knocked down by a lorry and sustained a fractured base five years before. Pulsating exophthalmos and ulceration of the cornea were marked, while the roaring noise made life intolerable. The noise disappeared on compressing the right common carotid artery, and was made worse by compressing the left artery. Ligation of the right internal carotid artery was performed five years ago, and the noise has completely disappeared. No evil effects followed.

CASE 2.—Male, aged 21. Had been kicked on the jaw by a horse three years before. The usual signs and symptoms of this condition had followed, and a ligation of the common carotid artery was performed elsewhere a year afterwards. The patient stated that the noises disappeared in about a week, and then came back again almost as badly as ever. Pulsating exophthalmos was not very obvious; ligation of the internal carotid stopped these noises altogether.

CASE 3.—Male, aged 35. Had been kicked on the side of the face by a horse six months before. All the ordinary signs and symptoms were present and the noise could be heard without a stethoscope. Ligation of the internal carotid artery was performed four years ago and the noise has been very greatly diminished, although the patient says it has not quite disappeared.

ANEURYSMS OF THE CAROTID ARTERIES

Idiopathic aneurysms of the common carotid artery are occasionally seen in women, and a large number of them are bilateral. Sometimes they appear to increase in size up to a certain point and then remain more or less stationary. The condition is serious and dangerous if nothing is done for it and causes great discomfort. The following are three interesting instances, the first of which was apparently the direct result of a tonsillectomy probably from bruising or partial damage to the wall of the vessel.

CASE 4.—A girl, aged 12, was seen nine years ago with what was supposed to be a gland in the neck. She had had her tonsils and adenoids removed six months before. On examination the swelling was clearly an aneurysm in the neighbourhood of the bifurcation of

the carotid on the left side. It was the size of a large egg and had apparently increased rapidly in size. The Wassermann was negative. An incision was made and the aneurysm was explored. A large sac was found behind the vessel at the bifurcation, more or less wrapped round the common, external, and internal carotid arteries. It was necessary to tie all three vessels before pulsation ceased, while the sac extended too near to the base of the skull for excision to be possible. The child made an uninterrupted recovery though a small, firm, non-pulsating swelling has persisted ever since. This indeed nearly always happens unless the sac of an aneurysm is dissected out.

CASE 5.—Mrs. A., aged 54, was sent to see me with a diagnosis of a large goitre. When she entered the consulting-room a large symmetrical, bilobed swelling could be seen in the neck, looking indeed very much like a huge parenchymatous goitre. On examination it was quite obvious that the swelling consisted of two large symmetrical aneurysms of the common carotid arteries, each the size of a small coconut. The Wassermann reaction was negative and no cause for the condition could be assigned. Ligation of both common carotid arteries was performed with an interval of four months between the operations. No untoward symptoms occurred and all pulsation in the aneurysms has disappeared. The patient is perfectly fit but still has two hard non-pulsating swellings the size of hen's eggs. Recently she has asked me to remove these, but her state is so satisfactory that I am inclined to leave well alone.

CASE 6.—Mrs. B., aged 52, had a positive Wassermann reaction, and a big aneurysm of the left common carotid artery about the size of a very large hen's egg. Here it was possible to ligature the artery above and below the sac and dissect the sac out. This produced a complete cure.

It is noteworthy that in all the above cases ligation of one, or even both, common carotid arteries produced no hemiplegia or other untoward symptoms, but the liability to this and also to gangrene of a limb after ligation of a main vessel is of course much diminished when an aneurysm has been there for some time previously.

INNOMINATE ANEURYSM

CASE 7.—Mrs. C., aged 52, complained of pain down the right arm and up the right side of the neck, and feelings of pulsation in the root of the neck, where a very deep pulsating swelling could just be felt. Radiography showed a round swelling behind the clavicle, and as is often the case it was difficult to feel sure whether the aneurysm was really arising from the innominate, subclavian, or the common carotid vessel. The inner end of the clavicle was dislocated and the sac exposed, where it was found to be an innominate aneurysm. Any attempt to get below the sac appeared to be exceedingly difficult and hazardous, and it was therefore decided to tie the common carotid and subclavian vessels above the sac. No evil results followed, and when seen a year afterwards the patient appeared well, though she complained of weakness and coldness in the right arm.

ANEURYSM OF THE INTERNAL ILIAC ARTERY

The following is an interesting example of another aneurysm which it is difficult not to regard as the result of a surgical procedure.

CASE 8.—A man, aged 47, was brought to me with vague lower abdominal pain, rectal discomfort, tenesmus, and mucus in the stools. On examining his rectum the finger could hardly be inserted as the whole pouch of Douglas was occupied by a huge round, pulsating swelling. This could just be felt in the suprapubic region, and a systolic bruit could be heard. His Wassermann was negative, but he gave a history that three years before he had had an operation for a fistula-in-ano which was followed by very deep and prolonged plugging. This proved afterwards to have been on the same side as the aneurysm, and it is difficult not to believe that the two were connected and that the internal iliac artery had not been bruised or damaged. A laparotomy was performed,

and the whole pelvis was found to be occupied by a huge sac. Without much difficulty the internal iliac artery, which was abnormally big, was tied above the sac. No untoward results followed, all pulsation disappeared, and a year after the operation the patient appeared perfectly well.

ANEURYSMS OF THE LIMBS

There is little doubt that the commonest aneurysm in the limbs is the popliteal aneurysm, and the second commonest the femoral. These limb aneurysms arise from a number of causes, in which syphilis and injury play a considerable, but by no means universal, part. Continued flexion movements of joints have always been credited with some effect in the causation of aneurysms, while the lodgment of emboli, usually infected emboli, arising in any of the embolus-forming diseases, is by no means an uncommon cause. In elderly men it is not very rare for one or even bilateral popliteal aneurysms to develop gradually and apparently simultaneously without obvious reason.

FEMORAL ANEURYSMS

Excision of the sac of a femoral aneurysm, though not necessarily difficult, is often rendered more or less impossible either by the actual size of the aneurysm or by its extending very high up, in which case a simple ligation of the femoral or iliac artery, just above the sac, is usually successful in stopping the pulsation, and gangrene is unlikely to occur.

CASE 9.—Male, aged 54. Had had disseminated sclerosis for many years, with much crippling and infection of the bladder. Quite suddenly he started pain in the right groin, and a pulsating swelling rapidly started to form in Scarpa's triangle. Within a fortnight the swelling had become very large, the whole thigh and leg dusky red and oedematous, while the swelling pulsed freely, had a systolic bruit, and extended above Poupart's ligament. Whether this was due to an embolism or not is not quite certain, but the pain was so intense and the aneurysm looked so inclined to burst, or at any rate to leak, that something obviously had to be done for it as soon as possible. The external iliac artery was ligatured by the extraperitoneal method, just above the sac. All pulsation and pain stopped at once and within a few days the swelling had diminished to half its size and had become hard, while the oedema and dusky skin of the limb had gone. When the patient left the nursing-home the aneurysm appeared cured.

CASE 10.—Miss D., aged 36, gave a history of ten days' illness with pains in the back and legs, and fever. Four days before a painful swelling had appeared in the left Scarpa triangle, and in the four days this had developed into a large pulsating mass with a systolic bruit which was still increasing rapidly. The heart had a marked mitral murmur, and though it seemed probable that the patient had infective endocarditis, operation appeared urgently necessary. The artery was tied above and below the sac, which was exceedingly adherent. The sac was removed completely, this necessitating removal of a bit of the femoral vein. Healing by first intention occurred and the foot remained quite warm, with good movements. This patient developed hemiplegia six months afterwards and died of infective endocarditis.

POPLITEAL ANEURYSMS

CASE 11.—Mrs. F., aged 25, was admitted six weeks after an apparently septic confinement, with a history of a rapidly appearing, painful swelling in the popliteal space, of a few days' duration. She clearly had a rapidly increasing popliteal aneurysm, while her general condition was good. The sac and artery were exposed, and as it was thought that the condition was probably due to an infected embolus, it was deemed unwise to dissect the sac out, and the artery was tied immediately above the sac. As is often the case in popliteal aneurysms, the condition of the foot gave rise to anxiety for some days, as it remained very cold and blue, but it ultimately recovered, and the patient got about with a weak, but useful, leg.

CASE 12.—Male, aged 70, with atheroma, a low blood pressure, and negative Wassermann. Had had double popliteal aneurysms, one of which extended well up into the thigh, for some years; they were apparently not causing him very much trouble. Early one morning he had sudden pain in the left foot and calf of the leg, while the left foot and leg suddenly became cold, numb, and blue. All pulsation in the left aneurysm ceased. He was brought up to London hurriedly, and it seemed highly probable that an embolus had occurred, and that this could be localised just above the sac of the aneurysm; possibly the clot had swirled up from below. Ten hours after the onset the sac and artery were explored in the hope of removing the clot. The spot where the clot was was easily identified about 1½ inches above the sac; the artery was opened, the clot taken out, and the artery resutured with a watertight suture. Good pulsation returned in the vessel below the suture line; for three days the condition of the foot appeared to improve, but gangrene slowly set in and amputation had to be performed.

This is one of four personal cases of removal of a clot from an artery and suture of the vessel. In two of these the limb afterwards recovered, and in two it became gangrenous.

FEMORAL ARTERIOVENOUS ANEURYSM

Common though arteriovenous aneurysms were during and after the war, they are undoubtedly rare in civil life.

CASE 13.—A man, aged 52, accidentally wounded himself in the left thigh while sharpening a butcher's knife two years before. He had a slight pain in the thigh and a small pulsating swelling could be felt at the centre of Hunter's canal, with a marked thrill and a to-and-fro "machinery" murmur. Very little venous engorgement was present, but the usual cardiac changes seen with an arteriovenous aneurysm—viz., hypertrophy and a systolic murmur—were both observed. Through a long incision over the centre of Hunter's canal the aneurysm was exposed: a small sac was present communicating with both artery and vein; the artery and vein were each tied above and below the communication, and pieces of them, together with the sac, excised. Uninterrupted recovery followed.

OTHER ANEURYSMS OF THE LIMBS

Aneurysms of the smaller vessels of the limbs are by no means uncommon and they are usually the result of trauma, with or without an open wound. In accordance with the general principle already enunciated, the further they are from the trunk the easier they are to cure by operation, and the more likely it is that the radical operation of excision of the sac can be performed. The following are a few instances:—

CASE 14.—A boy, aged 18, had a motor accident and a deep cut on the front of the lower third of the left leg. Two months afterwards he presented himself with a pulsating swelling in this area, about the size of a walnut, and with a systolic bruit. At operation it proved to be sacular aneurysm of the anterior tibial artery which was completely cured by ligature of the vessel and excision of the sac.

CASE 15.—A boy, aged 14, cut his left wrist on some barbed wire and presented himself with a typical arteriovenous aneurysm of the radial artery. There was a pulsating swelling with a thrill and a continuous "machinery" murmur, while the veins round were dilated. Both ends of the artery and vein were tied, and portions of each with the sac were dissected out.

CASE 16.—A girl, aged 20, had stabbed herself in the left forearm with a penknife five weeks before. At the time of admission she had a round, dusky, pulsating swelling near the wound. There was no thrill, but a sharp systolic bruit. The sac was exposed and the radial artery tied above and below it, and the sac then dissected out.

CASE 17.—A girl, aged 18. Since the age of five had had prominent pulsating veins on the back of the right hand and forearm. There was a pulsating swelling over the radial artery at the wrist and another pulsating swelling in the palm of the hand. All the veins of the hand and forearm were congested and pulsating, while there was a thrill and roaring continuous bruit. There was a systolic murmur in the heart, no scar, and no history of injury. Her hand was almost useless. This was thought to be one of the very rare instances of a non-traumatic arteriovenous aneurysm, probably congenital. The radial artery was explored and ligatured above and below the swelling, with a result that pulsation in the veins almost stopped. A year later she stated she was much better, but there was still a large number of pulsating veins and a roaring bruit. The ulnar artery was therefore ligatured just above the wrist. This completely stopped all pulsation and bruit, and the swelling disappeared.

CASE 18.—Mrs. G., aged 50, had for three months noted a small pulsating swelling on the front of the right wrist. She is quite certain there had been no injury. It caused slight pain, had a soft bruit, and was clearly an aneurysm of the radial artery about the size of a large filbert nut. Under a local anæsthetic the artery was tied above and below the sac, and this cured the condition.

The above cases of aneurysms in the limbs exhibit one rather curious phenomenon—namely, that more than half of them were seen in private practice. One would have expected the working-class patient to be the more subject to such injuries.

The important principles in the operative treatment of any aneurysm of this kind consist (a) in not using a tourniquet; (b) in obtaining complete control of the main artery by exposing this some little way above the sac and placing an arterial clamp, or temporary rubber ligature, on it; (c) an attempt should be made if possible to perform a radical excision of the sac. Matas' operations of endo-aneurysmorrhaphy, though excellent in theory, are most difficult to perform in practice. The two instances in which I have attempted it were both failures.

THE USE OF THE COMPLEMENT-FIXATION REACTION IN THE DIAGNOSIS OF HUMAN PSITTACOSIS

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IN the laboratory investigation of a case of suspected psittacosis isolation of the virus should be our principal aim. Virus may be found in the blood or in the sputum and its presence there can be demonstrated by mouse inoculation. Blood is only virulent during the early stages of the disease, whereas the sputum remains virulent over a much longer period and commonly has a higher virus content: it constitutes, therefore, the material of choice (Meyer and Eddie, 1934; Rivers and Berry, 1925). Unfortunately this line of investigation is not always fruitful. Sputum is always scanty in human psittacosis and it may prove impossible to obtain a suitable sample. Further than this, the case may be seen too late for there to be any hope of isolating virus. Hence it is obvious that a serological reaction of diagnostic value would be of the greatest service in the investigation of a case of suspected psittacosis. In a number of virus infections of man neutralising antibody is developed in sufficient

quantity for the neutralisation test to be of use in diagnosis. This is not so in psittacosis (Bedson and Western, 1930; Rivers and Schwentker, 1935), but there is evidence that a specific complement-fixation reaction can be obtained with the serum of individuals suffering from this disease (Bedson, 1933). The probable explanation of these two apparently contradictory observations is that psittacosis virus possesses two antigens each of which excites the production of specific antibody, and that one of these antibodies is responsible for the neutralisation test whilst the other gives the complement-fixation reaction. That a virus may be antigenically complex has been shown in the case of vaccinia (Craigie and Wishart, 1934; Hughes, Parker, and Rivers, 1935) and I have evidence, as yet unpublished, suggesting that the same is true of psittacosis virus. It has now been possible to apply this complement-fixation reaction to a number of sera coming from cases of psittacosis and other conditions and the findings form the subject of this paper.

TECHNIQUE OF THE TEST

The technique is essentially the same as that I use for complement fixation with other viruses and their antisera (Bedson and Bland, 1929). The specific antigen consists of a 5 per cent. suspension of virulent mouse spleen in sterile saline or distilled water, in the latter case made isotonic by the addition of the requisite quantity of 9 per cent. salt solution. Such a spleen suspension when freshly made contains a certain amount of complement and if used in that state will interfere with the accurate dosage of complement in the test. After standing in the refrigerator ($\pm 4^{\circ}\text{C.}$) for a week the bulk of the complement will have become inactive and the suspension will then be available for use, but the fresh suspension can be heated for thirty minutes at 56°C. without destroying its specific fixing power. In actual practice this latter mode of treatment has not been resorted to, since spleen suspensions a week or more old were always available.

The keeping power of these antigens varies considerably. Some will retain their antigenic property unchanged for several months, others will have lost it in as many weeks. It is not known what factor or factors are responsible for this, nor is it claimed that the antigen employed is the best that could be evolved; these are points worthy of further investigation. The anticomplementary activity of the antigen is tested on each day of the test and an antigen is only considered suitable if it does not interfere with the action of 1 M.H.D. (minimum hæmolytic dose) of complement when present in double the dose used in the test. A control antigen consisting of a 5 per cent. suspension of either a normal mouse spleen or the spleen of a mouse inoculated with ectromelia virus is invariably incorporated in the test. The serum under examination is used in dilutions ranging from 1 in 1 to 1 in 8, 0.1 c.cm. of each dilution being employed. In addition to the sera under investigation each test includes a known psittacosis serum and two or more normal human sera. All sera are inactivated at 56°C. for thirty minutes. The dose of antigen is 0.1 c.cm. and 2 M.H.D. of complement are used throughout the test. The usual antigen and serum controls are always included and the volume in each tube made up to 0.8 c.cm. with saline. After 2-3 hours' fixation at room temperature 0.2 c.cm. sensitised cells are added and the test placed in the 37°C. water bath for thirty minutes when the first

reading is taken. A second reading is made after the test has stood at room temperature overnight.

RESULTS

In Table I. are given the results obtained with the sera from cases in which a confident diagnosis of psittacosis had been made on clinical and epidemiological grounds. With the exception of one case, Pz., the findings obtained with the complement-fixation test are in complete agreement with this diagnosis. It is to be regretted that an attempt to isolate virus was not made in every case but this was sometimes unavoidable. Case M. for instance, a patient in Austria, had no sputum at any time, it was, in fact, this feature of the case which led to a sample of serum being sent in for complement fixation. Of those in which sputum gave a negative result three, Lo., Ba., Sf., were patients in the Allgemeinen Krankenhauses S. Georg, Hamburg, under the care of Prof. Hegler, and the sputum was sent for investigation to the Robert Koch Institute, Berlin. The material from Case L. was examined for virus at the London Hospital.

Table II. records the findings with the sera from a number of cases suspected possibly of being psittacosis. Three of these, from patients W., P., and K., were oxalated plasma and such material is definitely inferior to serum for a finely balanced complement-fixation test such as this. A fairly high degree of non-specific fixation may be given by oxalated plasma as is seen from the findings with these three specimens. In the case of patients W. and K. the interpretation of the test is obvious; it is negative. But in Case P. the interpretation is not so clear. However, although the degree of fixation was greater with the psittacosis antigen with this specimen even with the undiluted serum it was not complete, and since a further reading made later in the disease showed no increase in fixing power, it seems probable that the reading of this test as negative is correct. The serum from Case Bl. fixed complement equally well with both specific and non-specific antigen, and apart from the suggestion that this serum was Wassermann-positive—a point which it was not possible to investigate owing to the amount of serum available—the explanation of this finding is obscure. In the remaining seven cases the interpretation of the test is clear. It should be added that in Case Bc. clinical opinion was divided as to the nature of the disease.

The results obtained with a number of control sera are given in Table III. The great majority of these sera were obtained from amongst those sent in for the Wassermann reaction. They were selected after this test had been carried out and those giving a negative reaction deliberately chosen. However, a few positive Wassermann sera were included, since previous experience had shown these to give fixation both with the psittacosis and control antigens.

In no case was the interpretation of the findings with these control sera in doubt. As one might have expected the positive Wassermann sera fixed complement equally well with both antigens, thus revealing themselves and obviating the possibility of their being returned as false positives. They did not all fix complement equally well with these antigens but this was not unexpected; one fixed rather better with the psittacosis antigen than with the control for which it is difficult to assign a reason. It is possible, of course, that, occasionally, a positive psittacosis fixation might be obscured owing to the

TABLE I.—CASES DIAGNOSED AS PSITTACOSIS ON CLINICAL GROUNDS

Case.	Isolation of virus.	Epidemiological evidence.	Day of disease when serum taken.	Complement fixation.								Interpretation of test.	Remarks.
				Psittacosis antigen.				Control antigen.					
				Serum dilutions.									
				1	2	3	4	5	6	7			
H.	Sputum +	Contact with dis. budg.	14th day.	++++	++++	++++	..	—	..	..	Pos.	—	
He.	"	"	"	++++	++++	++++	..	—	..	..	"	—	
Ki.	"	Contact with apparently healthy budg.	30th day.	++++	++++	++++	..	—	..	..	"	—	
L.	Blood — Sputum —	Contact with dis. parrots.	18th day.	++++	++++	++	..	+	..	..	"	Blood only obtained late in disease. Specimen of sputum not satisfactory.	
Lo.	Sputum —	Contact with sick budg.	12th and 19th day.	++++	++++	++++	..	+	..	..	"	—	
Ba.	"	"	..	++++	++++	++++	++++	+	—	—	"	—	
S.	Not done.	Contact with dis. parrot.	Early conv.	++++	++++	++++	..	—	..	..	"	—	
Sf.	Sputum —	Contact with sick budg.	2nd week.	++++	++++	++	..	—	..	..	"	—	
I.	Not done.	Contact with apparently healthy budg.	3rd week.	++++	..	..	..	—	..	..	"	Budg. exam. for presence of virus with neg. result.	
Ca.	"	Contact with dis. budg.	"	++++	..	..	..	—	..	..	"	Patient bred budg. and 2 died shortly before her illness. These birds were not exam. for virus but stock of breeder, from whom she had obtained birds, was shown to be infected.	
M.	"	Contact with parrots and budg.	30th day.	++++	++++	++++	++++	+	—	—	"	No sputum obtainable for exam. for virus.	
Pz.	..	Contact with dis. budg.	Early conv.	++++	—	—	..	+++	—	—	Neg.	Almost certainly case of psittacosis.	

TABLE II.—CASES IN WHICH FOR CLINICAL OR EPIDEMIOLOGICAL REASONS PSITTACOSIS WAS SUSPECTED

Case.	Isolation of virus.	Epidemiological evidence.	Day of disease when serum taken.	1	2	3	4	5	6	7	8	Interpretation of test.	Remarks.
W.	Not done.	None.	3rd week.	+	..	..	..	++	..	..	..	Neg.	The 3 specimens were oxalated plasma which, though satisfactory in a comp.-fixation test employing a large margin of complement, is not suitable in a finely balanced test such as this one. Although serum from case P gave better fixation with psittacosis antigen than with the control even with undiluted serum fixation was not complete.
P.	Sputum —	"	12th and 21st day.	+++	++	—	..	+	..	..	..	"	
K.	"	"	4th week.	+++	+	—	..	+++	..	..	..	"	
Sm.	Not done.	Contact with human case.	6th week.	+	—	—	..	—	..	..	..	"	
O.	"	Contact with parrots.	"	—	—	—	..	—	..	..	..	"	Seen only at end of illness. History of severe illness with pneumonic symp. whilst at sea. Contact with parrots during voyage.
A.	"	Contact with budg.	16th and 26th day.	—	—	—	..	—	..	..	..	"	Budg. acquired about 3 weeks prior to illness. Budg. exam. for virus with neg. result. Pt.'s canary died shortly after pt. became ill; no virus found in bird.
B.	Sputum —	"	17th day.	—	—	—	..	—	..	..	..	"	Sputum plentiful, unlike psittacosis; exam. on more than one occasion.
C.	Not done.	None.	36th day.	—	—	—	..	—	..	..	..	"	—
R.	"	"	23rd day.	—	—	—	..	—	..	..	..	"	—
Bl.	"	Contact with newly bought healthy canary.	30th day.	+++	++	—	—	+++	+++	+++	+++	"	Test done with 3 different specific and control antigens and on each occasion serum fixed complement as well or better with control antigen.
Be.	"	Contact with virus in lab. work.	19th day, 3rd mth.	++++	++++	+++	+	—	..	..	..	Pos.	—

+++ to + represent the degree of fixation. Readings after 30 mins. at 37° C. (upper row) and after standing overnight at room temperature (lower row). Dis. budg. = diseased budgerigars. Conv. = convalescence.

patient's serum giving a positive Wassermann reaction, but this would only lead to a false negative finding.

CONCLUSIONS

The evidence, outlined above, shows that the complement-fixation reaction, when suitably carried out, gives valuable assistance in the diagnosis of psittacosis in man. Six of the sera came from cases under the care of Prof. Hegler in Hamburg and the

TABLE III.—Control Sera

Source of serum.	No.	Result.	
		Psittacosis antigen.	Control antigen.
Wassermann negative ..	33	—	—
	6	±	—
	4	±	±
	4	±	±
Wassermann positive ..	3	++++	++++
	1	++++	++++
	1	++++	++++
	1	+++	+++
	1	++	++
Continued fever, ? enteric	1	—	—
Lobar pneumonia ..	1	++	±

test was carried out without any further information than that the patients were possibly cases of psittacosis. Comparing the result of the test with the epidemiological findings and his final opinion of these cases clinically, Prof. Hegler has expressed the opinion that the complement-fixation reaction had "ein durchaus sicheres Resultat ergeben." The reaction has been found positive as early as the twelfth day of disease and as late as the fifth week. How long it may remain positive it is impossible to say, but from the findings in Case Be. and from observations made on hyperimmunised guinea-pigs, one would not expect the antibody responsible for this reaction to persist for very long in convalescence. It must be emphasised that the specific complement-fixing power of these human psittacosis sera is of a low order and that in order to detect it a finely balanced test is essential. For this reason rigorous control of the test is absolutely necessary if erroneous results are to be avoided.

I wish to thank Prof. C. Hegler, director of the Allgemeinen Krankenhauses, Hamburg; Dr. E. L. Sturdee, of the Ministry of Health; Dr. A. P. Thomson, of Birmingham; and several of my colleagues at the London Hospital for the supply of sera and information from cases of suspected psittacosis.

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ARTIFICIAL PNEUMOTHORAX FOR THE RELIEF OF ACUTE PLEURAL PAIN

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SYMPTOMATIC therapy, so often a *faute-de-mieux* resource, acquires a biological significance approaching that of specific therapy, when, by increasing subjective comfort it removes, in addition, a pathogenic factor of potential danger to life. This generalisation is aptly exemplified by the successful treatment of pleural pain. In the young and robust, the pain of acute pleural inflammation, because of its agonising character, demands relief primarily on grounds of humanity. In the middle-aged or elderly, however, the onus of therapeutic responsibility is greatly augmented by the probable occurrence of the serious results which commonly follow upon failure to confer subjective relief; for in such patients myocardial failure and death may be sequelæ of the restlessness, insomnia, and anoxæmia occasioned by the respiratory pain, whilst the shallow, pain-inhibited respiratory excursion produces a varying degree of pulmonary basal atelectasis, which is the prelude to pneumonic infection and its satellite toxæmia with a predilection for the myocardium and the medullary centres.

Ideally, rational symptomatic therapy should achieve alleviation of a symptom by nullification or attenuation of the physio-pathological mechanism basic in its production. Scientific accuracy of this order cannot be claimed in regard to the symptom of pleural pain; neither the popular theory of friction between inflamed serous surfaces, nor Bray's¹ concept of parietal pleural elastic tension, is universally applicable. But there remains the universally accepted clinical observation that separation of the visceral and parietal pleural layers, whether by fluid or by air, results, without exception, in the disappearance of the pain of acute pleurisy. The methods generally adopted to relieve pleural pain are (1) strapping the affected hemithorax, (2) the application of counter-irritants, and (3) the exhibition of narcotic-analgesic drugs of the opium or barbiturate group. Attempted immobilisation by strapping is only partially effective, and has the disadvantage that it favours the production of atelectasis; it also hampers consistent clinical and radiological examination. The application of counter-irritants results chiefly in the greasy discomfort of the clinician in charge of the case. The exhibition of narcotic-analgesic drugs is indictable on their inefficacy except in doses capable of inducing cardiomedullary depression which expedites the initiation of anoxæmia, atelectasis, and their attendant ills.

Because of its acknowledgedly complete efficacy in relieving pleural pain, separation of the pleural layers, as by an artificial pneumothorax, seems to be the most rational mode of therapy; its employment, though generally recognised in text-books, is mentioned by them only in terms of curt dismissal. The risk of secondary pleural infection, of causing or increasing myocardial distress, and of superimposing the dangers inherent in the induction of pneumothorax—such as pleural shock and air embolism—appear to be the reasons underlying this attitude. They are more theoretical than experiential, and critical examination reveals them as bogies with a very infrequent incidence and therefore of insignificant import when

balanced against the prophylactic value of efficiently abolishing the anguish of respiratory pain with its clinical consequences.

TWO CASES

The following two cases are cited to support the thesis which has been advanced.

CASE 1.—Mrs. A., aged 58, a week previously had been concussed and had fractured her right clavicle; three manipulations under general anaesthesia had been necessary before the fracture had been set satisfactorily. At noon on the day before I was asked to see her, she felt a sudden, acute pain at the angle of the right scapula; a few hours later she began to cough up bright blood-stained sputum; her temperature rose to 100°, her pulse-rate to 104, and her respirations to 28; pulmonary embolism was diagnosed. She became progressively more ill, and I saw her in consultation with Mr. R. Trevor Jones thirty hours after the onset of her pulmonary symptoms, when the physical findings were: temperature 101° F.; pulse 120, regular, thin; respiration 32; blood pressure 140/80. Moderate cyanosis of lips, malar eminences, and ears. Very restless, delusional, and incapable of rational conversation. Respirations shallow, grunting, and obviously painful. Looks desperately ill. Area of cardiac dullness and heart sounds normal. Diminished movement of right lung base with a large area of dullness, faint bronchial breath sounds, and a pleural rub below the angle of the scapula. Sputum muco-purulent with much bright red blood.

On the history and these findings I concluded that she had developed an atelectatic pneumonia secondary to acute respiratory pain from the pleurisy overlying the area of embolism. It was obvious that the prognosis was extremely grave. Because of the danger of morphia or other narcotic analgesics in adequate doses, to a patient as ill and as old as she, I decided to induce a shallow pneumothorax to relieve the pleural pain, and 250 c.cm. of air were injected without distressing her. The only other treatment prescribed was an expectorant mixture and four-hourly brandy.

Within an hour of the induction her respiratory rate fell from 32 to 20, and she breathed and coughed without distress. Ten hours later—during most of which time she had slept soundly—the clinical picture was surprisingly changed. She was rational, alert, completely comfortable, and not at all cyanosed; her temperature was 100°; her pulse and respiration-rate 94 and 22 respectively. A faint pleural rub had reappeared at the right base, so she was refilled with 200 c.cm. of air. No further refills were given, and, apart from an evening rise of temperature to 99° for three days, she convalesced and recovered completely without incident.

A skiagram of her lungs taken a fortnight later showed pleural thickening at the right base with woolly parenchymal shadowing suggesting unresolved pneumonia. These appearances eventually disappeared completely.

CASE 2.—Mr. B., aged 70, had fractured three lower left ribs 48 hours before I saw him in consultation with Dr. G. N. Grose; for 24 hours he had been coughing and complaining of extreme respiratory pain at the left base. He had suffered from essential hypertension for 18 years and recently had manifested symptoms of myocardial inefficiency. The physical findings were: temperature 99°, pulse 80, respirations 24, blood pressure 170/90 (before this illness usually 200/100). Looks very distressed and ill; slight malar and labial cyanosis. Area of cardiac dullness increased moderately downwards and to the left; mitral first sound prolonged and low-pitched; aortic second sound accentuated. Left base immobile; large area of dullness behind with faint broncho-vesicular breath sounds and a coarse pleural rub.

For 24 hours conservative measures, including diathermy of the chest wall, were resorted to. But his general condition deteriorated and his cardiopulmonary symptoms exacerbated; he was very restless and grossly cyanosed, his breathing was acutely painful, and he had frequent agonising paroxysms of cough which produced purulent nummular sputum; his temperature (morning) was 97°, pulse 120, respirations 36. The physical signs

at his left base were unchanged; it was plain that he had developed an atelectatic pneumonia.

The prognosis seemed almost indubitably fatal; narcotic analgesic drugs were definitely dangerous to use. Persuaded by these considerations and by the memory of its therapeutic value in Case 1, I decided to induce a shallow pneumothorax; 250 c.cm. of air were injected. The almost immediate change in his state was spectacular; he breathed and coughed painlessly and his cyanosis became only slight. Eight hours later his temperature was 99° F., pulse-rate 108, and respirations 20; he was breathing and coughing without distress and he was not cyanosed. The prognosis had altered completely. Two hours later and 24 hours after this there was a recrudescence of his previous symptoms, with a rising pulse and respiratory rate and return of a faintly audible pleural rub. On both occasions immediate relief followed a refill with 200 c.cm. of air. No further refills were given. He convalesced rapidly, and his cough and purulent sputum had disappeared by the ninth day of illness.

COMMENT

These two case-histories have many common features. In each case the patient was elderly and had developed an atelectatic pneumonia because of the shallow breathing necessitated by the pain of acute pleurisy coupled with compulsory adoption of the supine posture (vide Briscoe²); in Case 1 the correctness of the diagnosis was supported radiologically; in both cases the anoxaemia consequent upon shallow breathing and partial pulmonary atelectasis, added to the toxæmia of secondary pneumonic infection, compelled a prognosis of death from cardiomedullary depression. But in both cases the induction of a shallow pneumothorax produced a dramatic metamorphosis of the clinical and prognostic picture, by its relief of respiratory pain, and so of the anoxaemia and atelectasis; moreover, in each case the amount of air sufficient to give relief was too small to be capable of causing myocardial embarrassment. The employment of artificial pneumothorax for acute dry pleurisy has theoretical sanction because of its accepted efficacy in removing the respiratory pain, especially since it thus minimises the possible sequential dangers facing the patient. The two cases detailed show that this theoretical sanction is supportable by practical experience.

The general circumstances indicating the therapeutic employment of pneumothorax for pleural pain have been considered. In post-operative cases in which an abnormally initiated diaphragmatic paralysis enhances pulmonary basal atelectasis its value seems worthy of further research. Coghlan³ in this country and many foreign observers have advocated lung collapse for the treatment of lobar pneumonia; but despite the striking support given to them by the experimental studies of Lieberman and Leopold⁴ their advocacy has not found general favour, chiefly because of a theory based clinical timidity. Whatever the theoretical objections to the induction of major lung collapse in lobar pneumonia, there can be few or none to a consideration of the pain-removing, comfort-giving injection of the innocuously small amount of air necessary to produce pleural separation in those early days of the disease in which the ultimate prognosis is influenced by the degree of general and myocardial exhaustion to which the patient is subjected. Taylor⁵ has testified in support of this contention.

SUMMARY

1. The pain of acute dry pleurisy demands removal in young patients on humane grounds; in the elderly

this is imperative as a prophylactic measure against the occurrence of anoxæmia and atelectatic pneumonia which is so often fatal.

2. The therapeutic methods in general use are either only very partially effective or dangerous.

3. The induction of a shallow pneumothorax invariably relieves pleural pain and so removes anoxæmia and atelectasis. The amount of injected air necessary is so small as to be quite harmless.

4. Two cases are detailed in which atelectatic pneumonia and anoxæmia, secondary to pleural pain, suggested a fatal prognosis. Dramatic recovery followed the induction of an analgesic pneumothorax.

5. The indications for the employment of pneumothorax to relieve acute pleural pain are discussed.

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ARTIFICIAL PNEUMOTHORAX IN THE MANAGEMENT OF LOBAR PNEUMONIA

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PNEUMOTHORAX as a spontaneous disease has been recognised definitely since the time of Riolan¹ (1648). The first purposeful attempt experimentally to produce pneumothorax in animals is ascribed to Hewson² (1767). Forlanini³ is credited as the first to employ artificial pneumothorax clinically in 1882. The application of this procedure as a therapeutic measure in pneumonia was due to Friedemann⁴ in 1921, but the appearance of Coghlan's⁵ paper in 1932 served to reawaken interest in this measure. In 1932 two cases of lobar pneumonia were given artificial pneumothorax in my service at the Philadelphia General Hospital, and in 1933 I suggested a more extensive clinical application. About this time Liebermann and Leopold⁶ reported their experimental studies upon dogs with induced pneumonia, including one case of lobar pneumonia in a man aged 44, who responded promptly and favourably to artificial pneumothorax. They were able to collect no more than 50 cases reported in the literature before 1934, with 47 recoveries and 3 deaths. Many of these cases were children in whom mortality from lobar pneumonia is admittedly low.

At the Philadelphia General Hospital (of 2500 beds) we deal with the poorer strata of society, among whom ignorance, neglect, and economic stress are perennial. The mortality-rate in lobar pneumonia under such conditions must be high. Hence our desire to observe the effect of artificial pneumothorax. This was administered to 47 cases: 27 whites with a case-mortality of 37 per cent., 20 negroes with one of 50 per cent. mortality, total death-rate 43 per cent. The number of refills varied from two to eight, an average of 400 c.cm. being given each time. We carefully avoided the induction of a positive pressure, although there is some evidence in support of that as a preferable procedure. Under the conditions as stated, we never observed any influence upon venous pressure, determined intra-

venously, and no appreciable influence upon the blood pressure.

Summarising our 47 cases, there were 39 males and 8 females, ranging in ages from 23 to 65 years, and one case 15 years of age. Twenty-four were admitted from the fourth to the sixth day of the disease, nine at an indefinite period, ten on the second day, and four on the first day. The types were 1 and 2 and group IV. Only one developed empyema. Several had an effusion, but in no instance could fluid be ascribed to the pneumothorax. Three died in less than twenty-four hours after admission. One of these, a negro, aged 26, was found post mortem to have nephrotic kidneys and fatty degeneration of the liver. The only one to develop empyema was a white man of 46 who had a mitral regurgitation, an enlarged liver, a 4 plus Kahn, also 4 plus with all antigens. He was a type 1. He recovered from pneumonia, but died three months and nine days after admission, having undergone several operations for empyema. A luetic negro of 32 had hypertrophy of the left ventricle and vascular disease, and had been ill for two weeks before admission. He died four days later.

In a previous paper Dr. H. F. Robertson and I⁷ called attention to lues as a factor in unresolved pneumonia. What influence syphilis has upon the course of pneumonia I am unable to state. Several of our fatal cases were syphilitic, but some of those who recovered also had strongly positive Kahn and Wassermann reactions. However, the influence of this infection in causing delayed resolution in pneumonia seems definite, though no case presented among the pneumothorax group.

One very obese, white man of 26, a post-encephalitic with a Parkinson syndrome who had had bulimia and still had polydipsia and polyuria, died on the fifteenth day of the disease, seven days after admission. Two had fibrillation on admission. One of these was jaundiced. One negro of 54 had been ill in bed four weeks, attended only by neighbours before admission. He had a right upper lobe lesion when brought in, but he died of a pneumococcus meningitis (group IV.) sixteen days after admission. A white man, aged 65, an indigent, had been ill for five days in the city shelter and died two days after admission.

If we exclude the ten cases briefly referred to above, there remain 37, with 10 deaths, a mortality of 27 per cent. This seems justifiable. It was less an error of judgment in including them originally than a desire to study the effect of artificial pneumothorax on all of the cases of lobar pneumonia admitted to the wards in a certain period of time. Many of the cases reach our institution after suffering more or less neglect and privation. Selection of cases may seem more appropriate than the elimination of those manifestly unfit for any reason. In omitting ten of the series, we have, at the same time, endeavoured to portray the results obtained under both conditions. We are continuing our observations. A much larger experience will be necessary before a really valid opinion can be expressed, despite the strikingly favourable results obtained by Lieberman and Leopold in experimentally induced pneumonia in dogs.

Although theoretical arguments might be marshalled, we have not been able to conclude that pneumothorax is of real practical value in the treatment of pneumonia. It does confer almost instant relief upon those suffering from coincident pleuritis, but it does not cut short the attack of pneumonia. Frequently, too, it ameliorates cough and expectoration. It seems equally definite that it is innocent of any collateral ill-effects. It frequently lowers the temperature level, sometimes to a surprising extent, and when marked the fall is accompanied by profuse

sweating. These pseudocrises are less uniformly accompanied by a subjective sense of well-being than one sees when a foreign protein is given by vein, especially when a protein shock reaction is given before the end of the third day of pneumonia. In both instances, however, the physical signs pursue an uninterrupted course.

The scope of this paper precludes more than a brief reference to the Schilling count. Dr. Walter Crocker and Dr. Eleanor H. Valentine, the latter a former interne at the Philadelphia General Hospital, have added materially to the Schilling method and extended its usefulness by what they have termed the shiftogram; of evil portent is a sharp shift to the left, when both myelocytes and juveniles escape into the blood stream. It only remains for me to add that a careful study of the staining properties and the architecture of the leucocytes often furnishes a basis of prognostic value.

I desire to extend my sincere appreciation to my colleagues on the medical staff for permission to include their cases, to Dr. John A. Wagnetz and to Mrs. Wagnetz for their aid in the compilation of statistical material, and to my internes, Drs. Roscoe B. G. Cowper, Albert Behrend, and Vernon L. Tuck for their untiring efforts.

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HUMAN ANTHRAX IN BAROTSELAND TREATED WITH NOVARSENO BENZENE

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HUMAN anthrax is a comparatively rare disease; it is more or less confined to certain localities, and to a certain section of the population. The pustular lesion, on both white and black skins, is very characteristic, and once seen will never be mistaken for anything else.

Among the cattle-owning Marozi natives of Northern Rhodesia, especially among those who live in the upper Zambesi valley (Barotse plain) anthrax is not uncommon, and has a high fatality-rate. These natives live with their cattle out on the plain during the dry season, June to December, and as the flood waters of the Zambesi gradually inundate the plain, so the natives retreat with their cattle to the higher bush country. The spores of *Bacillus anthracis* must be present in the soil of the plain, where the cattle have grazed for years, and with the advent of the rainy season, conditions for the germination of these spores are favourable; cases of anthrax, both human and bovine, occurring after the commencement of the rains. Human infection is almost always due to the use of infected hides as clothing or bedding; the spores remaining quiescent until the advent of the favourable rainy season conditions.

It is difficult to substantiate the natives' reports, but, as far as can be gathered, during December, 1933, and January, 1934, there were 25-30 cases of

human anthrax within a radius of 20 miles of Mongu, the administrative centre of Barotseland. It was said that almost every patient died, and we may take it that the mortality was over 60 per cent. The disease was of the "malignant pustule" type, but it was learned on questioning that there had also been several deaths from what appeared to be an acute hæmorrhagic gastro-enteritis, death invariably occurring within 24 hours of the onset. These were quite probably cases of intestinal anthrax, due to ingestion of infected meat.

In January, 1934, an outbreak of what turned out to be anthrax was reported by one of the petty chiefs, and instructions were given that all human cases were to be brought into hospital; while instructions with regard to the control of the disease in the affected village were also issued. Previously no cases of anthrax had been treated in hospital, nor, so far as can be ascertained from past records, had they been seen or diagnosed by the medical officer, stationed at Mongu.

Four cases of anthrax were brought to hospital during the months January-April, 1934, and 5 more during the months December, 1934-February, 1935. These 9 cases were all treated in Mongu Hospital. In each of them smears were made from the fluid in the surrounding vesicles, or if these had coalesced from the tissues underlying the slough; these smears were stained with Gram's stain and all showed *B. anthracis*, scanty in some, profuse in others.

The only treatment given, apart from boric fomentations locally, was novarsenobenzene (nearsphenamine) intravenously, or a similar preparation, sulpharsenobenzene (sulpharsphenamine) intramuscularly. One injection of 0.6 g. was usually found sufficient, but if the œdema persisted after 24 hours a second was given. In every case this œdema—which had been severe and likely to cause death in 3 of the patients—was relieved in 36 hours, and had disappeared in four days. The temperature subsided, after an initial rise, and was normal in five days. Clinically all the cases (except No. 5, one of the two which proved fatal) were much improved in 24 hours, and apart from the resulting ulcer, with its sloughing centre, the 7 patients who recovered were perfectly fit and ambulatory on the sixth day. After the slough had separated, the ulcer was covered with adhesive plaster and left for a week; the plaster was then renewed, and at the end of three weeks or a month the patient was discharged with a pink though rapidly browning scar.

THE NINE CASES

CASE 1.—Female, aged 16. First seen and admitted to hospital on Jan. 6th, 1934. Pustule of two days' duration, situated over the right scapular region. The black centre of the pustule was $\frac{3}{4}$ in. in diameter; there was a surrounding erythematous zone with vesicles containing yellowish fluid, and a brawny œdema extending 3 in. from the centre of the pustule. Films made from the fluid in the vesicles showed *B. anthracis*, mostly in short chains of three or four bacilli. On admission the temperature was 100.2° F.; pulse-rate, 96. Neokharsulphan 0.3 g. was given intramuscularly, the dose being repeated on Jan. 7th. Œdema was considerably less on the 8th, but the temperature was still 100°. After injection of novarsenobenzene 0.3 g. intravenously on the 9th there was no further rise of temperature, and the œdema was gone by the 10th. No more treatment was given except the application of adhesive plaster to the resulting ulcer, after the separation of the slough on Jan. 12th. The ulcer healed by the 25th and the patient was discharged.

CASE 2.—Male, aged 18. First seen and admitted to hospital on Jan. 12th, 1934. Anthrax pustule of three

days' duration, situated on the left side of the face over the angle of the jaw; much œdema, especially of the neck, causing respiratory embarrassment. Temperature, 102.6°; pulse-rate, 110; respirations, 35. Scanty *B. anthracis* present. On Jan. 12th novarsenobenzene 0.6 g. was given intravenously. On the 13th œdema was much less; temp., 102.4°; pulse, 90; resp., 25. On the 14th œdema was again less; novarsenobenzene 0.3 g. was given intravenously. By the 15th œdema had gone (temp., 99.8°; pulse, 80; resp., 18) and on the 16th the patient was quite fit, save for a sloughing ulcer at the site of the pustule. Plaster applied over ulcer on Jan. 19th and the patient was discharged on Feb. 9th with the ulcer fully healed.

CASE 3.—Male, aged 15. First seen and admitted to hospital on Feb. 3rd, 1934. Anthrax pustule of two days' duration near the outer canthus of the left eye, which



23.12.34 S.v.34
Photographs of the patient in Case 4 showing cure of large anthrax pustule on right cheek.

was quite closed by œdema extending all over the left side of the face and neck. Temperature, 104°; pulse-rate, 120; respirations, 32. *B. anthracis* plentiful in fluid from vesicles. On Feb. 3rd novarsenobenzene 0.6 g. was given intravenously. Next day the œdema was much less (temp., 101°; pulse, 84; resp., 20) and on the 5th it had almost gone (temp., 99°). By the 6th there was no œdema and the patient was quite fit. Plaster was applied on the 11th and he was discharged, with the ulcer healed, on the 24th.

CASE 4.—Male, aged 17. First seen on April 23rd, 1934. Anthrax pustule of three days' duration situated near the outer canthus of the right eye (Fig. 1). Much œdema of the eye, face, and neck; vesicles surrounding the pustule beginning to break down. Temperature, 101°; pulse-rate, 90; respirations, 28. *B. anthracis* scanty in scrapings. This patient had novarsenobenzene 0.6 g. intravenously on the 24th, and by the 26th his œdema had gone and he was quite well. On May 1st plaster was applied to the ulcer, and on the 20th the ulcer had healed and the patient was discharged. Fig. 2 shows the condition on May 8th.

CASE 5.—Male, aged 1 year. First seen and admitted to hospital on Dec. 7th, 1934, with an anthrax pustule of five days' duration situated on the chest near the left breast. The child was obviously very ill; temperature, 100; pulse-rate, 160; respirations, 40. *B. anthracis* was present in tissues round the pustule, and there was considerable œdema of the chest wall. No veins could be located, so sulpharsenobenzene 0.15 g. was given intramuscularly. The child died three hours after admission. No post-mortem was allowed by the parents, but death was obviously due to toxæmia.

CASE 6.—Male, aged 5. First seen and admitted to hospital on Dec. 19th, 1934, with an anthrax pustule of

two days' duration situated on the left side of the neck; much œdema of the neck and chest wall. Temperature, 101°; pulse-rate, 140; respirations, 36. *B. anthracis* very plentiful in the surrounding vesicles. On Dec. 19th novarsenobenzene 0.3 g. was given intravenously. Next day the œdema was less, but the temperature was up to 103.8°; so a further 0.3 g. was given intravenously. On the 21st the child was much better (temp., 99°; pulse, 100; resp., 30). On the 22nd however he developed abdominal ascites which increased until the abdomen was greatly distended. Weakness increased and death occurred on the evening of the 23rd. Possibly the ascites was due to overdosage with N.A.B. There was no jaundice. No post-mortem was allowed.

Following closely on Case 5, which was rapidly fatal owing to treatment being so long delayed, Case 6 was unfortunate. It was thought wise to give massive treatment before the toxic effects of the disease had got the better of the child's constitution, but this child might have recovered if the second dose of novarsenobenzene had not been given.

CASE 7.—Male, aged 25. First seen and admitted to hospital on Dec. 29th, 1934. He had two anthrax pustules, one of two days' the other of three days' duration; one was situated on the right side of the face on the angle of the jaw, the other on the left side of the forehead. There was a great deal of œdema, especially on the right side of the neck, causing difficulty in breathing. Temperature, 100°; pulse-rate, 130; respirations, 30. The first dose, on Dec. 29th, was novarsenobenzene 0.6 g. intravenously; the temperature rose to 103° that evening, but the pulse-rate dropped to 120. On the 30th the œdema was less (temp., 101°; pulse, 100; respirations easier). Next day the œdema was less again (temp., 99°; pulse, 90). By Jan. 1st all the œdema had gone; the temperature was normal and the pulse-rate 84. On the 2nd the patient was quite well and the sloughs separating. Plaster was applied to both residual ulcers on the 5th, being removed and reapplied on the 15th. The ulcers had healed on discharge on the 28th.

CASE 8.—European male, aged 40. First seen on Jan. 30th, 1935. Large anthrax pustule of three days' duration on the flexor aspect of the left wrist. This trader owns and handles numbers of cattle, and each year loses a few from anthrax; though he did not suspect that this "sore" was anthrax. He was treated as an out-patient. When he was first seen the temperature was 102° and the pulse-rate 110; there was considerable œdema extending from the wrist and hand to the shoulder, but no axillary adenitis. On Jan. 30th he had novarsenobenzene 0.6 g. intravenously, and on the 31st the œdema was reduced though the temperature was up to 102.4°; pulse-rate, 104. On Feb. 1st a further intravenous injection of 0.6 g. was given and by the 3rd the œdema had gone and the temperature and pulse were normal. Plaster was applied on Feb. 8th and the ulcer had healed by March 5th.

CASE 9.—Female, aged 50. First seen and admitted to hospital on Feb. 5th, 1935. There was an anthrax pustule of two days' duration on the left side of the neck; also a great deal of œdema around the neck and on the left side of the face. Temperature, 102°; pulse-rate, 110. She was given novarsenobenzene 0.6 g. intravenously on Feb. 5th and the œdema was almost gone by the 7th, the temperature being normal. Œdema had disappeared on the 8th and the patient was fit, save for the resulting ulcer. Plaster was applied to it on the 11th and renewed on the 20th. The patient was discharged on March 2nd, the ulcer having healed.

RÉSUMÉ

Nine patients with pustular anthrax were treated with novarsenobenzene (neovarsphenamine) only. Seven of them made remarkable recoveries; the other two, aged 1 year and 5 years, died. The first of these, Case 5, was only brought to hospital on the sixth day of the illness, and was moribund on admission. The second, Case 6, responded to

the second dose of novarsenobenzene, but developed a fatal ascites probably due to the toxic effects of this drug on the liver. The number of cases is too small to allow of comparison with other methods of treatment, but the results suggest that novarsenobenzene, if given within four days of the appearance of the pustule, will almost certainly cure the disease.

I am indebted to the acting director of medical services, Northern Rhodesia, for permission to publish this paper.

TREATMENT OF HÆMORRHAGIC DISORDERS WITH VITAMIN C

By H. ENGELKES, M.D.

It is only a few years since Szent-Györgyi isolated ascorbic acid (vitamin C) in crystalline form, and most attempts to use this substance in clinical practice have been concerned with scurvy, which is due to a primary deficiency of the vitamin. If the administration of pure ascorbic acid were limited to this condition we should not often need to use it, especially as fresh fruit juices already provide a remedy. But the real importance of Szent-Györgyi's discovery, from the clinical standpoint, lies in its application to so-called conditioned scurvy. One speaks of a conditioned deficiency when an intake of vitamins sufficient for a normal person proves insufficient because of abnormal conditions in the body. These conditions may be very various, including inadequate absorption, destruction by intestinal bacteria or by a general infection, and perhaps too rapid excretion by the kidneys. Endocrine disturbances also may sometimes play a part.

We are only at the beginning of our knowledge of this conditioned scurvy, and we owe a debt to Stepp and his co-workers who have given an impetus to its clinical investigation. At the Congress of Internal Medicine at Wiesbaden in 1934 Stepp,¹ after pointing out that the typical symptoms of frank scurvy are hæmorrhages and alterations in the bones and teeth, reported results he had obtained at Munich by the treatment of other hæmorrhagic disorders with ascorbic acid. His co-workers, Böger and Schröder, had observed that in such disorders the amount of plasma protein is decreased, the decrease being greater in the albumin than the globulin; in other words, the albumin-globulin ratio is lower than normal. When ascorbic acid was injected the findings were reversed, and this led them to give ascorbic acid to a patient with hæmaturia, with the result that it disappeared at once. The same favourable effect was seen in a case of Henoch's purpura. Stepp also pointed out that the oral administration of the vitamin sometimes does not help either because it is disintegrated in the small intestine, or because in these patients absorption is interfered with.

In August, 1934, Böger and Schröder² reported fresh discoveries. They succeeded in stopping alarming intestinal hæmorrhages in a patient with hæmophilia; and in a case of essential thrombopenia, two days after injections began, they saw the skin and mucous membrane hæmorrhages stop, the urine being free from blood another two days later. The bleeding-time was reduced, the thrombocyte count rose, and the protein content and albumin-globulin ratio of the plasma were increased. Hæmorrhage stopped long before the number of blood-platelets

rose appreciably, and from this it could be deduced that reduction in platelets is not the only decisive factor in the causation of hæmorrhages—others perhaps being alterations in the plasma or in the permeability of the capillary walls. Lastly, they suggested that in bleeding from other causes (icterus, hæmorrhages from uterus, stomach, or kidney) ascorbic acid might be of service.

Shortly afterwards I was in the position to treat a serious case of essential thrombopenia successfully by this method,³ while Vogt⁴ has reported good results both in thrombopenia and in gynæcological hæmorrhages. Having since had further success in cases of hæmorrhagic disorder, I propose to report them briefly. The three summarised below were seen in private practice and form an unselected series.

Description of Cases

I. ESSENTIAL THROMBOPENIA *

A woman 64 years old, operated on ten years ago for stone in the ureter and now suffering from gall-stones, was troubled in February, 1934, with profuse nose-bleeding, for which the rhinologist could find no local cause. The blood was not examined and after a few weeks the bleeding ceased, only to return, however, in November, 1934. She then had gall-stone colic, and a week later skin hæmorrhages and sore spots in the mouth; on Dec. 13th hæmaturia and melæna began. When I saw her on Dec. 17th the skin showed hæmorrhages of various sizes and forms: there were petechiæ, ecchymoses, bruises on the neck, face, and extremities, and to a less extent on the trunk. The inside of the cheeks, the palate, and the underside of the tongue also showed blood effusions. In the mouth there were here and there superficial epithelial defects. There were no hæmorrhages in the fundus oculi and the vitreous. The urine seemed to be pure blood; it did not contain any glucose in demonstrable amount. The faeces were tarry.

The liver and spleen could not be felt. The region of the gall-bladder was tender to pressure. The temperature did not rise higher than 37.8° C. (100° F.) rectally. The blood pressure was 270 systolic and 130 diastolic. Blood examination: hæmoglobin 90 per cent., erythrocytes 4,700,000, leucocytes 6000, thrombocytes 3000, bleeding-time (Duke) 10 minutes. In the blood smear no blood-platelets were seen, only some large forms of thrombocytes. For the rest no abnormalities were found in the blood film. The blood-clot did not contract in the least. Plasma

Course of Case I

Date.	Bleed- ing- time.	Throm- bocytes	Albu- min.	Globu- lin.	Alb.- glob. ratio.	Treatment.
			g. per 100 c.cm.			
Dec. 14	10 min.	3,000	3.67	1.65	2.22	150 mg.
" 19	6 "	"	—	—	—	150 mg.
" 21	3 "	12,000	—	—	—	150 mg.
" 24	1 1/2 "	56,400	3.80	1.65	2.30	150 mg.
" 27	1 1/2 "	360,000	—	—	—	200 g.
Jan. 4	1 1/2 "	316,000	4.16	1.70	2.45	200 g.
						ceblon.
						orange juice.

proteins: albumin 3.67 g. per 100 c.cm., globulin 1.65 g., albumin-globulin ratio 2.22. Wassermann reaction negative.

The diagnosis was acute exacerbation of chronic essential thrombopenia, hypertension, and cholelithiasis. The very high blood pressure was a contra-indication to splenectomy; for when a splenectomy has unfavourable results, it is often due to circulatory disturbances. Hence it was decided to commence treatment with vitamin C. Ascorbic acid (in the form of Cebion, Merck) 150 mg. a day was injected intravenously and the result was surprising (see accompanying Table). After only two days' treatment there were no new hæmorrhages in the skin

* This case has already been reported.³

and mucous membranes, though the urine still contained much blood. After four days the urine was very much clearer, the bleeding-time had fallen to 3 minutes, and the number of blood-platelets was only 12,000. After six days the urine was clear, and after seven days it contained no albumin and the sediment no erythrocytes. The bleeding-time was now $1\frac{1}{2}$ minutes, the number of thrombocytes being 56,400; in the incubator the blood-clot retracted after 15 minutes. Meanwhile the blood pressure had dropped to 180 mm. systolic and 80 mm. diastolic. After nine days the number of blood-platelets was 360,000, and during the rest of the time the patient was under observation this figure remained the same, while the bleeding-time remained about $1\frac{1}{2}$ minutes.

After cebion had been given intravenously for ten days, it was stopped and 200 c.cm. orange juice was given by the mouth. This contains about 100 mg. ascorbic acid, whereas according to Szent-Györgyi a grown-up person only needs about 50 mg. a day. Later in the illness the patient had another attack of gall-stones; the temperature rose to 38.3°C . (100.9°F .) rectally and there was a trace of bilirubin in the urine. This attack passed after two days; she was given Urotropine and the temperature became normal. In order to prevent a relapse of the hæmorrhagic condition I went on giving ascorbic acid orally and the patient took a few oranges every day or tablets of ascorbic acid. She is now apparently well.

Certain observations may be made on this case. (1) Although spontaneous recovery is a possibility, it is remarkable that after two days no new hæmorrhages occurred and after six days the urine contained no more blood. (2) The very long bleeding-time (10 minutes) fell within a few days to 3 minutes, and after seven days to $1\frac{1}{2}$ minutes, remaining as short as that after the medicament had been stopped for several weeks. (3) The number of blood-platelets rose in ten days from 3000 to 360,000. (4) After only a few days the blood-clot retracted normally. (5) During treatment the high blood pressure fell considerably, but one cannot say how far the fall is permanent or due to the vitamin treatment. Ascorbic acid—but only in very large doses—is said to reduce the blood pressure of animals.

II. PURPURA INFECTIONOSA

A boy, aged 15, became acutely ill on March 10th, 1935, with high temperature, headache, joint pains (especially in elbows and knees), and vomiting. Further there was purpura over the whole body, chiefly on the extremities and abdomen, but also on the face; on the thighs were large ecchymoses. He had epistaxis but no bleeding of the gums, or hæmaturia, or melena, or sore-throat. He was continuously delirious, had incontinence of urine and faeces, and a rectal temperature of 40°C . (104°F .). The pulse was small and its rate 140. The lymph glands were not swollen, and there was no œdema. No abnormalities were found in heart or lungs, and the spleen and liver were not palpable. The left knee was much swollen with effusion of fluid, and very painful, several other joints being also affected. The urine contained a trace of albumin and hyaline casts; no sugar and no blood-cells. Blood: hæmoglobin 85 per cent., erythrocytes 4,200,000, leucocytes 14,000, thrombocytes 128,000, bleeding-time 3 minutes, morphological picture normal.

Cebion 150 mg. was given intravenously each day, and after three days, though the temperature was just as high, no new hæmorrhages appeared and the old ones were quickly absorbed. The general condition was much better. The boy complained, it is true, of pain in the joints, but he had become psychically normal and the incontinence and vomiting had stopped. After that the vitamin was given by mouth (150 mg. daily). At the same time 2 g. of aspirin a day was administered. The temperature dropped during the following days, the joints gradually became less painful, and after four weeks the patient had recovered and was discharged.

This was a serious case of purpura infectiosa, in which the hæmorrhagic manifestations disappeared

and the general condition improved under treatment with vitamin C. The fever and polyarthritis, however, were not noticeably influenced.

III. ESSENTIAL HÆMATURIA

A woman of 23, before her illness a nurse, has the following interesting history. Up till Nov. 28th, 1932, she was healthy, but then she suddenly developed hæmaturia; the urine seemed to be pure blood. This condition lasted a week after which the hæmaturia almost (but not quite) disappeared. She had some hæmaturia up to March, 1935—i.e., for $2\frac{1}{2}$ years; though its intensity was very variable blood could always be seen under the microscope, and there were several serious attacks (Nov. 28th to Dec. 5th, 1932; August 11th to 25th, 1933; April 17th to the middle of June, 1934; Dec. 4th to 18th, 1934; Jan. 30th to middle of February, 1935; and March 1st to 15th, 1935). As I have said, these attacks were merely the exacerbation of a continual hæmaturia lasting $2\frac{1}{2}$ years. In the course of this time she had right-sided pleurisy, lasting about five weeks, and radiograms taken afterwards showed a decreased mobility of the right half of the diaphragm, and an old tuberculous focus in the middle lobe of the right lung. Because of this pleurisy she spent the first half of 1934 in a sanatorium, and there she had an "attack" of hæmaturia lasting two months. Menstruation was normal all the time, and she never had bleeding from the nose, gums, skin, or intestines.

Repeated urological examinations were made, both during and between attacks of hæmaturia, and no abnormalities were ever seen in the bladder wall; no tuberculosis, no papillomata, and no stones. Out of both the ureters spouted urine containing blood but free from tubercle bacilli or other bacteria. Indigo-carmin was excreted on the left side after 8 minutes, and on the right side after 10 minutes. During the attacks the urine from both ureters looked like pure blood. The pyelogram was normal on both sides, and no stones were visible. The patient had always taken fruit and vegetables in the food; she had never had a special diet, so that there was no question of a primary deficiency.

She was admitted to hospital on March, 4th, 1935, during an attack of hæmaturia. She looked quite healthy and physical examination revealed no abnormalities in heart, lungs, or other organs, apart from the limitation of movement of the lung border on the right side, due to the pleurisy. The urine contained much blood, and no sugar; the blood-urea was 35 mg. per 100 c.cm.; Ambard's constant was 0.08 (normal); and the dilution- and concentration-power of the kidney was normal. Blood: hæmoglobin 100 per cent., erythrocytes 5,500,000, leucocytes 6000 (normal formula), thrombocytes 487,000, bleeding-time (Duke) 1 minute. Plasma proteins: albumin 3.98 g. per 100 c.cm., globulin 2.14 g., ratio 1.85.

A diagnosis of essential hæmaturia was made and the patient was given ascorbic acid intravenously (Redoxon, Hoffmann-La Roche); during the first six days she had 100 mg. daily and after that 200 mg. in single doses. During the first six days the decrease of blood in the urine was scarcely perceptible; but after that the hæmaturia quickly diminished, and after ten days no erythrocytes could be found microscopically in the sediment. The albuminuria, however, had not yet disappeared. Redoxon was given intravenously for a further six days, and then in doses of 200 mg. a day orally till May 25th; after that she had 100 mg. daily by mouth. No more erythrocytes were found on microscopical examination of the urine except on one occasion after a wound with the catheter. The albuminuria had soon disappeared. For the sake of certainty she is still taking 100 mg. ascorbic acid daily by mouth to prevent a relapse; but after $2\frac{1}{2}$ years' invalidism she is now once more fit for work.

Summary

In the above cases the favourable results obtained in Stepp's clinic were repeated. In none of them was any remedy given apart from ascorbic acid, except in Case III., where the patient had salicylates after the hæmorrhages had disappeared. In all three

cases the administration of ascorbic acid was followed by rapid improvement, and it caused no unpleasant symptoms.

Additional Note

I have since seen two other cases in which the same treatment proved successful.

A woman of 70, who suffered in 1932 from carcinoma of the uterus, was irradiated for that reason with radium. She recovered and was in good health up to June, 1935. She then had an intensive hæmaturia and several ecchymoses (some the size of a fist) on the legs. Rumpel-Leede's sign was positive. Physical examination revealed no abnormalities in the chest or abdomen. The blood pressure was 190 systolic and 100 diastolic. Cystoscopy revealed no alterations of the bladder, and no stones were seen on radiography. The urine contained neither tubercle bacilli nor other germs. Blood: hæmoglobin 80 per cent., red corpuscles 4,200,000, leucocytes 4500 (normal formula), platelets 84,000, bleeding-time three minutes. Wassermann reaction negative. The blood-urea was 90 mg. per 100 c.cm. A moderate thrombopenia, combined with arterio-sclerosis, had probably caused this hæmorrhagic condition, and the patient was given 200 mg. redoxon daily. After two days no new hæmorrhages appeared; after four days the urine became much clearer, and after six days the sediment contained no more erythrocytes. For several weeks she took ascorbic acid by mouth (100 mg. daily), and there was no further hæmaturia or other hæmorrhage.

The fifth patient was a man of 62, operated on for lateral inguinal hernia. After operation a large blood effusion was present under the skin, along the right side of the abdomen and the leg and under the skin of the penis. After absorption of this effusion the wound did not cease to bleed, and the surgeon injected calcium, Coagulen, &c., without any perceptible result. When three weeks after the operation the wound was still bleeding I was asked to see the patient. He proved to be a drunkard and had cirrhosis of the liver. This organ was enlarged and firm, and in the urine was a trace of bilirubin. A daily dose of 200 mg. redoxon was given intravenously, and after 48 hours the bleeding had totally ceased.

The five patients of this series had capillary hæmorrhages. Where the hæmorrhage is venous or arterial—e.g., in duodenal ulcer—I should not attempt to treat it with ascorbic acid.

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STREPTOCOCCAL INFECTION IN CHILDBIRTH AND SEPTIC ABORTION

SOURCE OF INFECTION AND GROUPING OF HÆMOLYTIC STRAINS

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THIS study is based upon 204 cases of puerperal fever and 101 cases of septic abortion. These were bacteriologically examined by taking swabs from the cervix (occasionally from the vagina) whenever possible before any antiseptic treatment had been given. The swabs were cultivated aerobically on blood agar from which strains of hæmolytic streptococci were isolated and shown to produce hæmo-

lysin in Hartley broth cultures. Such strains were obtained from 62 cases of puerperal fever (30 per cent.) and 15 cases of septic abortion (15 per cent.). Of these 77 cases, 33 (43 per cent.) were very severe, endangering life, and 11 were fatal. Only one other death, from puerperal insanity, occurred so that with this exception all the deaths resulted from streptococcal infection.

SOURCE OF INFECTION IN PUERPERAL FEVER

Following the work of Smith (1931) the view became prominent that the source of the majority of puerperal infections due to hæmolytic streptococci is the nose and throat of attendants. It appears however that quite frequently the patient's own nose or throat may furnish a strain identical with that found in the uterus. Hare and Colebrook (1934) noted that about 30–40 per cent. of women who have acute puerperal infection harbour a potentially pathogenic type of streptococcus in the nasopharynx and that often the uterine and nasopharyngeal strains from one patient are serologically identical.

An attempt was made to determine the source of infection in cases that had hæmolytic streptococci in the uterus, excluding septic abortion. Swabs from the patient's throat and nose were cultivated as described above. In respect of 46 cases it was possible to obtain swabs from the throat and nose of attendants and others who had been in contact with the patient. When hæmolytic streptococci were isolated from the nose or throat of the patient, or any of the contacts, the strains were compared with the uterine strain of that patient, to determine whether or not they were identical. If the fermentation tests agreed, sera were prepared and cross-agglutination performed. Agglutinin absorption was used as the final criterion of identity.

In 10 cases hæmolytic streptococci were obtained from one or more contacts, and in 2 of these from the patient's nose or throat as well. In 8 other cases strains from the patient's nose or throat were compared with the uterine strain, contacts not being examined. The results are summarised briefly.

CASE 1.—One strain from the throat of a contact was not identical with the uterine strains.

CASE 2.—Three strains from the throat of three contacts were not identical with the uterine strain, but cultures from the nose and the throat of the patient corresponded with the infecting strain. This patient had laryngitis for a fortnight before confinement.

CASE 3.—A strain corresponding to the infecting strain was obtained from the throat of a contact, but a strain from the patient's throat was different.

CASE 4.—Two strains from the throat of two contacts were not identical with the infecting strain.

CASE 5.—Two strains were obtained from the throat of a contact. One of these and also cultures from the throat and nose of the patient corresponded with the uterine strain.

CASE 6.—Four contacts each yielded hæmolytic streptococci from the throat. One culture was identical with the infecting strain but this came from a nurse who was not attending the patient although employed in the same ward.

CASE 7.—Strains identical with the uterine strain were obtained from the throat and nose of a contact and from the throat and nose of the patient.

CASE 8.—A strain identical with the uterine strain was isolated from the throat of a contact, a handywoman suffering from tonsillitis.

CASE 9.—Two contacts yielded strains from the throat and nose but they were not identical with the infecting strain.

CASE 10.—Occurred in the same ward as Case 9 and had the same contacts. The strains from the throat and nose of one of the contacts were identical with the uterine strain of this case.

OTHER CASES.—In 8 other cases strains from the patient's nose or throat were compared with the uterine strain. In 5 they were identical; in 3 they were different.

Thus for 12 of 18 cases strains identical with the uterine strain were isolated from the throat or nose of the patient herself or of contacts; six times from the patient only, four times from a contact only, and twice from both patient and contact. There is no absolute proof that these were the sources of infection, but it is highly probable. When both patient and contact harbour the infecting strain in the nasopharynx the actual source becomes problematical. In 2 instances pharyngitis or tonsillitis was in evidence.

These results lend support to the view that the source of uterine infection is often the patient's own nasopharynx. And this is further suggested by comparing the incidence of hæmolytic streptococci in the throat and the nose of those who have a streptococcal uterine infection with the incidence among contacts or patients not so infected, as indicated below.

Swabs from the throat and nose were taken from 60 cases of puerperal fever or septic abortion in which hæmolytic streptococci were isolated from the uterus. This organism was obtained from the throat of 12 (20 per cent.) and in the nose of 9 (15 per cent.). These figures contrast with the findings in a group of apparently healthy contacts and patients from whom streptococci were not isolated from the uterus; 341 throat swabs were examined, 38 (11 per cent.) being positive, and of 329 nose swabs only 4 (1·2 per cent.) were positive. The difference is particularly great with regard to the incidence of positive nose swabs.

Of the 60 cases, 16 (27 per cent.) harboured hæmolytic streptococci in the throat, the nose, or in both. As indicated later, cultures from 12 of these cases were shown to belong to the group A of Lancefield (1933), the group that is potentially pathogenic for man and the cause of practically all severe cases of uterine infection in the puerperium.

GROUPING OF STRAINS BY THE PRECIPITIN TEST

Following the technique of Lancefield (1933) and Lancefield and Hare (1935) extracts were made from cultures and sera prepared in rabbits. Four sera containing group precipitin for group A strains and one serum containing group precipitin for group B were used. Some of these sera were tested and their properties confirmed by Dr. Ronald Hare, Queen Charlotte's Maternity Hospital, London, who also tested and assigned to their appropriate group the extracts of our strains that did not react with group A serum.

The importance of group A strains of hæmolytic streptococci in the aetiology of puerperal fever and their potential pathogenic properties for man in contrast to other groups has been stated by Lancefield (1933) and Lancefield and Hare (1935). Our results support this.

(a) *Strains isolated from the cervix or vagina in cases of puerperal fever.*—A total of 61 strains from 57 cases were tested: from the cervix only in 50 cases, from the vagina only in 3 cases, and one strain from each source in 4 cases. Of the 61 strains 60 belonged to group A. The remaining strain belonged to group B. It was isolated from the vagina of a patient who developed septicaemia and

pneumonia and died. A culture from the blood was not available.

(b) *Strains isolated from the cervix in cases of septic abortion.*—One strain from each of 12 cases was tested: 8 were group A, 2 group B, 1 group C, and 1 group D. Two cases were fatal, each infected with a group A strain.

(c) *Strains isolated from the nose or throat of patients with puerperal fever or septic abortion.*—From 12 cases of puerperal fever 17 strains from the patient's nose or throat, in 5 cases from both situations, were tested. These were all group A. In 8 cases they were identical with the culture from the uterus as judged by agglutinin absorption. In 4 cases, although the uterine and nasopharyngeal strains were both group A, they were not identical, presumably belonging to different types of this group. From one fatal case of septic abortion a group A strain was found in the throat as well as in the uterus, but their identity was not tested by agglutination.

(d) *Strains from the nose or throat of contacts with cases of puerperal fever.*—The 17 strains from the throat or nose of 13 contacts were tested: 15 of these were group A, 1 was group B, and 1 belonged to group H.

COMMENTS AND SUMMARY

1. *Streptococcus hæmolyticus* was isolated from the uterus twice as frequently in puerperal fever as in septic abortion, 30 per cent. and 15 per cent. of cases respectively.

2. The importance of group A strains in the causation of uterine infection in the puerperium, as stated by Lancefield and Hare (1935), is again demonstrated. Of 61 strains from 57 cases 60 belonged to group A, and it is not certain that the exception (from the vagina of a fatal case) was actually the infecting strain. In septic abortion group A strains were recovered from the uterus in only 8 of 12 cases.

3. All the deaths, with the possible exception noted in paragraph 2, were caused by group A strains.

4. The statement of Hare and Colebrook (1934) that 30–40 per cent. of women harbour the human pathogenic type of streptococcus in the nasopharynx at the time of puerperal infection and that not infrequently the nasopharyngeal and uterine strains are serologically identical is supported by our results. Hæmolytic streptococci were found in the throat or nose of 16 of 60 cases of puerperal uterine infection (27 per cent.). Cultures from 12 cases only were tested by the precipitin reaction but all were found to belong to group A.

5. An effort was made to determine the source of puerperal uterine infection by looking for a strain of streptococcus identical with the uterine strain in the nasopharynx of the patient or attendants, the criterion of identity being based on agglutinin absorption. In 12 instances identical strains were found, six times in the patient's nose or throat, four times in the nose or throat of an attendant, and twice in both patient and attendant. There is therefore considerable support for the view that the patient's own nasopharynx may frequently be the source of the uterine infection.

This work was initiated by Dr. R. Veitch Clark, medical officer of health for Manchester, and was done on behalf of the maternity and child welfare committee of the public health department of Manchester, who have provided an annual grant for the purpose. The assistance of Dr. D. Sage Sutherland, superintendent of Monsall Fever Hospital, and members of his staff, is also gratefully acknowledged.

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EPIDURAL HÆMORRHAGE DUE TO HÆMOPHILIA CAUSING COMPRESSION OF THE SPINAL CORD

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NEUROLOGICAL complications of hæmophilia, due to spontaneous hæmorrhage into part of the nervous system, are not common. Seddon¹ comments on the rarity of such lesions in reporting a case, probably of hæmatomyelia in the third and fourth lumbar segments causing paralysis of the quadriceps, pectineus and adductor magnus, with sensory loss corresponding to these segments. There were only two neurological complications in 29 cases of hæmophilia quoted by him and observed at St. Bartholomew's Hospital and the University Hospital, Michigan. Only 19 such cases are mentioned in Bulloch and Fildes's monograph on hæmophilia.² Tidy³ states that "the most dangerous hæmorrhages are those into the brain and spinal cord," but no examples are given in this work. A case of hæmatomyelia occurring in the cervical enlargement of a hæmophilic and causing respiratory paralysis is reported by Ordway and Gorham.⁴ Gunther⁵ states that bleeders may have meningeal hæmatomas leading to cerebral or spinal paralysis, but no certain case of the former has yet been known.

Two cases of paraplegia are quoted in Bulloch and Fildes's monograph; one, published by Ledoux in 1876, was that of a boy aged about six, a known hæmophilic, who was suddenly seized with severe girdle pains, and extensive paraplegia set in involving the lower limbs, trunk, and partly the arms. The boy survived this and the case was regarded at the time as one of hæmorrhage into the spinal cord. In the other, published by Van der Scheer in 1850, a man aged 30 was seized with severe pain in the back and paralysis of the legs after his first attempt at coitus; he died comatose and paraplegic the next day.

The clinical features of the case now to be described appear to have been due to a spontaneous epidural hæmorrhage in the upper part of the spinal canal causing compression of the cervical cord. I have found no reported case of this kind, either cranial or spinal, due to hæmophilia. P. E. Weil⁶ records a case of paraplegia caused, he believed, by lumbar puncture carried out four years earlier on a patient who was a hæmophilic. He describes meningeal hæmorrhage as being "altogether exceptional," and stated that this was the only case of the kind that he had seen.

CASE REPORT

A cardboard-box maker, aged 27, was admitted to the Archway Hospital, Highgate, on Jan. 10th, 1934, with a 24 hours' history of acute pain in the neck, legs, and back of sudden onset. When it began, he said, he was unable to bend his back or even to "move at all." He also complained of painful swellings in the left wrist-joint and on the right shin just above the ankle. There was no history of trauma. The previous history was: 1909-10, "rickets and anemia," for which he was treated for some years; 1925, "swelling" over right tibia, and albuminuria; 1926, severe prolonged hæmorrhage following extraction of teeth (transfusion necessary); 1930, hæmatoma of right thigh, which recurred five months later, and hæmorrhage into left knee and right rectus abdominis

muscle. Since 1930 there had been repeated hæmorrhages into the thigh, calf muscles, knee-joint, and left elbow.

No family history of hæmophilia could be obtained even after searching inquiry from the available relatives. That it was absent could not, however, be regarded as established, since the patient's mother was one of a family of fifteen children, and she had lost touch with most of these siblings. The patient had twelve brothers, five of whom died in infancy but there was nothing to suggest hæmophilia as a cause of death. In passing it is worth noting that this case exemplifies the fecundity which has been noted in hæmophilic families.

Examination.—The patient was a frail sallow man of rather poor intelligence. He was fully conscious and showed much anxiety. The temperature, pulse, and respiration-rates were normal. Blood pressure 128/68. No abnormality was found in the heart or lungs; the spleen was not palpable. There was a swelling over the left wrist-joint, with painful limitation of movement, and a tender firm swelling over the crest of the right tibia just above the ankle, about 1½ in. broad and 3 in. long; the overlying skin showed bruising and discoloration. The left foot was almost fixed in plantar flexion with fibrous shortening of the calf muscles which appeared to be adherent to the skin and were presumably the site of an old hæmatoma. Although there were no external signs of bruising anywhere along the vertebral column, there was great pain on flexion and extension of the spine, particularly in the cervical and lumbar regions; but not specially on rotation of the neck. The cervical and upper thoracic spinous processes were very tender. There were no signs of meningeal irritation, such as head retraction or Kernig's sign, and rigidity seemed to be due to voluntary fixation. The patient did not complain of headache but vomited twice soon after admission.

All the tendon-jerks were brisk with the exception of the right ankle-jerk which could not be obtained. The knee-jerks were much increased and there was a poorly sustained left ankle-clonus. Plantar responses were extensor, more markedly on the left. The abdominal reflexes were equal on the two sides. There was no loss of motor power in the legs but the patient was extremely reluctant to move them. There were no sensory changes other than the pain and hyperalgesia already described, and no abnormality in the cranial nerves or fundi. Sphincter control was normal. The urine was loaded with albumin but contained no blood.

On lumbar puncture the cerebro-spinal fluid dripped slowly out and was clear but deep yellow. A report stated that it formed a coagulum overnight, that the total protein was 1.2 per cent., and that there were 4 cells and 9 red cells c.mm. A blood examination showed:—

Red cells	..	6,512,000	Polymorphs	..	75%
White cells	..	7,600	Lymphocytes	..	18%
Hæmoglobin	..	105%	Large mononuclears	..	7%
Colour-index	..	0.8			
Platelets	..	232,000			

The bleeding-time was 1 min. 50 secs., the clotting-time 17 mins., and the capillary resistance normal. The Wassermann reaction was negative.

Course of Illness.—During the week after his admission the patient's general condition improved; no further hæmorrhages were detected, and the pain, controlled by moderate doses of morphia, gradually subsided. It persisted, however, in the lower lumbar region and over the sacrum where it was brought on particularly by flexing the thighs, as in sitting up. A small deep hæmatoma had appeared at the site of the lumbar puncture. Pain in the neck was absent after the first week, but the other physical signs remained unaltered. A mild attack of acute tonsillitis intervened on the sixth day but subsided in four days.

A fortnight after admission there was profuse hæmaturia, with bright red blood in the stools and epistaxis. The patient then complained of much tenderness in the left loin and an examination of the urine revealed the presence of a few hyaline and granular casts, pus cells, and numerous streptococci. There was no increase in pain over the spine, and although the tendon reflexes remained abnormally brisk, extensor responses could no longer be elicited. Radiography of the spine revealed no abnormality.

A further blood count at this stage gave:—

Red cells	..	5,016,000	Polymorphs	..	85%
White cells	..	26,000	Lymphocytes	..	12%
Hb.	..	82%			

Ten days later hæmaturia was still present though it was less severe, and there was still pain in the sacro-iliac region with tenderness in the loin. The patient's general condition was good, and he had no severe degree of anæmia, so that blood transfusion was not considered necessary at this time; the temperature remained normal. A fortnight later the urine contained a trace of albumin and a few red cells. A hæmatoma developed in the left buttock but disappeared in a few days. All pain had gone.

A further blood count gave:—

Red cells	..	5,130,000	Polymorphs	..	69%
White cells	..	7,200	Lymphocytes	..	30%
Hb.	..	90%			

On March 5th, nine weeks after admission, the patient was allowed to get up for the first time, but after three weeks there was a rise of temperature and a large hæmorrhage into the left elbow-joint occurred. (Aspiration with a wide-bored needle withdrew blood clot.) This resolved in ten days. On April 5th the only abnormal sign present on examination of the nervous system was exaggeration of the knee-jerks and left ankle-jerk. Lumbar puncture was repeated and the fluid was quite normal: cells, 5 per c.mm.; total protein, 0.04 per cent.

A further blood count gave:—

Red cells	..	4,960,000	Polymorphs	..	71%
White cells	..	20,400	Lymphocytes	..	29%
Hb.	..	90%			
Platelets	..	659,000			

The bleeding-time was 1½ mins., and the clotting time 30 mins.

The high white count at this stage was presumably due to the process of absorption of blood clot in the elbow-joint.

Early in May the patient was looking and feeling fit and well. He was up and about and free from pain or any other symptoms or signs. The urine contained a trace of albumin and a few red cells but no casts. He was discharged on May 7th and enjoyed good health until December, 1934, when he was readmitted for further hæmorrhages into the elbow and calf muscles. There were no abnormal signs on examination of the nervous system on this occasion. The bleeding-time was 1½ mins. and the clotting time 45 mins. The urine constantly contained a fair trace of albumin, some red blood-cells, and a few hyaline casts. He was discharged fit after a few weeks. The tests for renal function on his first admission to hospital were normal.

DISCUSSION

The case here described is one of acute spinal compression, slight in degree, associated with hæmophilia. There can be no doubt as to the nature of the hæmorrhagic tendency, in spite of the absence of family history and the relatively late onset at 19 years. His history of repeated hæmorrhages into joints and elsewhere since that age, the blood picture, and the clinical manifestations of hæmorrhage were all characteristic.

Although in the illness here described the patient was bleeding from the nose, bowel, kidneys, beneath the periosteum of the tibia, into the left elbow-joint, and, it is assumed, outside the spinal theca—i.e., from no fewer than six situations—he never appeared to be desperately ill. His general condition remained good and gave rise to no great anxiety after the first few days, when the neurological signs began to recede. There was never any severe anæmia, the lowest blood count showing 82 per cent. of hæmoglobin. The advisability of transfusion with a view to increasing the coagulability of the blood was considered during the phase of hæmaturia, but this had almost ceased within a fortnight of its onset, and no transfusion was carried out.

It was noticeable, however, that albuminuria continued, and this had been noted on admission and on two previous occasions, two and nine years previously. There was never any œdema or other signs of impaired renal function, and the blood-urea and urea concentration were normal. Nephritis, a well-known feature in purpura, appears to be a rare complication of hæmophilia, though Barney,⁷ quoting another authority, states that the changes of chronic nephritis are found post mortem in the kidneys of those hæmophiliacs who have suffered from repeated hæmaturia. In addition to the red cells some hyaline and granular casts were present in the urine in this case. The patient apparently had also a mild acute pyelitis, perhaps secondary to the tonsillitis which preceded it, but unequivocal evidence of true glomerulo-nephritis was lacking. I have found no references in the literature to physiological albuminuria associated with hæmophilia except a general statement by Wright and Ross⁸ that it occurs in some conditions, including hæmophilia, where there is diminished coagulability of the blood. It must be remembered that albuminuria had been observed in this patient nine years previously, and although it persisted, there was no evidence of a progressive renal lesion. The exact nature of the renal condition must remain uncertain unless further progress can be observed. It was thought that there might be some relation between persistent albuminuria suggesting undue capillary permeability, and the high protein content of the cerebro-spinal fluid. But in hæmophilia the capillary permeability is unchanged, and the Froin syndrome is more easily explained as purely the result of a spinal subarachnoid block.

When the patient was first seen the association of hæmophilia and severe pain in the back of the neck suggested the possibility of a spontaneous subarachnoid hæmorrhage, but there were no other clinical signs to confirm this and evidence of pressure on the cord was present. Greenfield and Carmichael⁹ state that xanthochromic fluids due to subarachnoid hæmorrhage rarely contain more than 0.100 mg. of protein in 100 c.cm. of cerebro-spinal fluid, even in the most highly coloured fluids. Large amounts of protein, more than 1 per cent., are most commonly associated with cases of spinal tumour, where a well-defined paraplegia usually develops. The signs of cord compression in this patient were slight and transient, but blockage of the spinal subarachnoid space may be complete without severe pressure on the cord itself, and it is assumed in this case that such a block, due to extradural hæmophilic hæmorrhage at the site of pain in the lower cervical region, had occurred. The relatively large amount of protein in the cerebro-spinal fluid suggested that severe obstruction had been present for at least a week or more. The patient, however, declared that the onset of pain dated only from the day before admission to hospital, and it is possible that continual oozing had been going on for some days with extension of the resulting hæmatoma down the cord, where eventually it caused irritation of the lumbar roots. Such a hæmatoma may be expected to extend more easily in a longitudinal direction and signs of direct pressure on the cord may, therefore, be delayed till some time after the onset of hæmorrhage.

That this subarachnoid block was only temporary was shown by the normal pressure and composition of the cerebro-spinal fluid two months later.

My thanks are due to Dr. C. D. S. Agassiz, medical superintendent of Archway Hospital, for permission to publish this case; to Dr. B. Kessel and members of the

staffs of other hospitals in which the patient had been treated, for reports on the previous history; to the staff of the Archway Group Laboratory for the pathological investigations; and to Dr. E. A. Blake Pritchard, consulting neurologist to the L.C.C., for valuable advice in the preparation of this report.

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Clinical and Laboratory Notes

PAROXYSMAL TACHYCARDIA TREATED WITH ACETYLCHOLINE

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ALTHOUGH Stepp and Schliephake¹ in 1925 reported full and almost instantaneous control of recurring tachycardia by intramuscular injections of a 20 per cent. choline derivative solution, and Starr² in 1933 described the immediate termination of 24 attacks of paroxysmal tachycardia in seven patients by the subcutaneous injection of acetylcholine, there are few, if any, accounts of this drug being used for the purpose in this country. The following case suggests that it might be more widely employed.

Acetylcholine is the parasympathetic hormone and is presumed to act on the heart by stimulating the vagal nerve-endings; it has the further action of peripheral vasodilatation, and should therefore be injected only with the patient lying prone, to counteract the accompanying hypotensive effect.

A boy, aged 14, was admitted to the Radcliffe Infirmary on August 13th, 1935. He has two siblings, alive and well; the mother died of "heart trouble." He has always been healthy, except for occasional "bilious attacks." His tonsils were removed 10 years ago and he has worn glasses for 11 years for refraction error. The present illness started on August 8th, five days before admission, with vomiting, and the patient was thought to be having another "bilious attack." He was sent to bed and was seen on August 12th (the day before admission) by his doctor, who noticed that his pulse-rate was unusually rapid. As it did not slow on the following day, and as he was still vomiting, he was sent into hospital.

On admission he was found to be an undersized boy, much cyanosed, and smelling strongly of acetone. He had a dry, thickly furred tongue; the heart, which was not enlarged clinically, was beating with an apparently normal rhythm, at 200-240 per minute, with occasional slowing for a few beats. The temperature was 95.8° F. There was no enlargement or tenderness of the liver, no oedema of the legs or other abnormal physical sign, apart from a few septic teeth. The systolic blood pressure was 80 mm. Hg; the diastolic was not obtainable.

The case was diagnosed as one of paroxysmal tachycardia, and various attempts to control the attack—including

pressure on the carotids, an ice-bag to the precordium, and an intravenous injection of strophanthin gr. 1/500—were made without effect. Quinidine, grs. 2½ was given by mouth four-hourly, but next day, August 14th, the tachycardia was still continuing though after the patient had been put to bed the rate had decreased to, and remained at, 160 per minute. This slight slowing of the heart-rate suggested that the condition might be one of auricular flutter, but an electrocardiogram (Fig. 1) confirmed the original diagnosis of paroxysmal tachycardia, so it was decided to try a subcutaneous injection of acetylcholine (B.D.H.) 25 mg. This was given, with the patient lying prone, but without any obvious result.

On the following day, August 15th, the heart-rate was still 160 per minute, but the heart was enlarging, the apex-beat being just outside the nipple line. The dosage of quinidine was increased to grs. 4 four-hourly, and a further subcutaneous injection of acetylcholine—this time 50 mg.—was given. Two minutes later a few dropped beats were noticed.

On August 16th the apex-beat was in the anterior axillary line, the boy's general condition was good (he stopped vomiting after admission and took fluids well), and the heart-rate was still steady at 160. Another injection of acetylcholine, 75 mg., was given, and two minutes later the heart stopped abruptly for one second, afterwards resuming a normal pace for fifteen seconds; it then alternated a few fast and a few slow beats for one minute and became fast for two minutes. This last sequence was repeated three times in ten minutes. Four hours later there were alternating periods of slow and rapid beating, but the periods of slow rhythm were gradually lengthening. Five hours after the injection the pulse-rate was 72, with an occasional extrasystole, and the volume was good. The apex-beat had returned to within the nipple line.

On August 19th the boy was well. No extrasystoles; pulse slow and steady; blood pressure 85/35; temperature normal; apex-beat in fourth left intercostal space, 3 in. from the midline; no cardiac murmurs audible. Progress was thereafter uneventful until August 22nd, when the apex-beat was again found to be "out"—viz., in the fourth space, 4½ in. from the midline. The heart-rate remained normal (about 60) but an electrocardiogram taken on August 23rd gave evidence of myocardial damage, evidenced chiefly by notching of the QRS wave, and widening of the QS interval (Fig. 2).

Convalescence was uneventful until Sept. 9th, when the boy had five attacks of tachycardia, each of which lasted about five minutes and stopped spontaneously. During the following fortnight he had a few further attacks. He was fully aware of the beginning, duration, and end of each attack, but was never distressed. He had no further trouble in October, and was discharged from hospital, with a good exercise tolerance, on Nov. 3rd. His heart remained enlarged, with slow, steady beat, and no murmurs; his blood pressure was 115/60.

This case presents several unusual features. First,

FIG. 1

FIG. 2

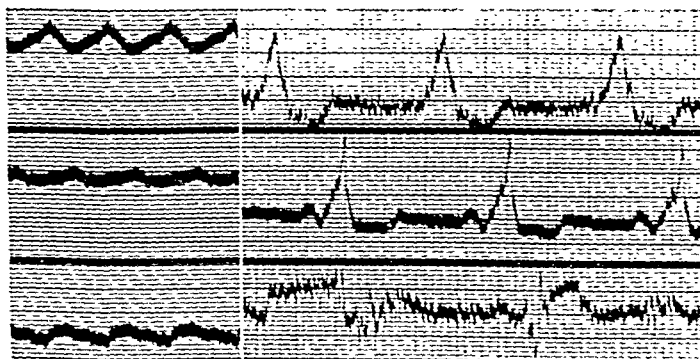


FIG. 1.—Electrocardiogram taken during attack of paroxysmal tachycardia. (The time-intervals are the same as in Fig. 2.)

FIG. 2.—Normal rhythm with notching of QRS wave and widening of QS interval.

the boy's age (14 years) which is young for the onset of paroxysmal tachycardia. Secondly, the large dose of acetylcholine required to control the tachycardia; Starr gives a dose of 30-50 mg. for adults. Thirdly, the absence of any unpleasant sequelæ to the injections, such as a sudden sensation of warmth in the face, hyperpnoea, sweating, salivation, and precordial pain, some or all of which are usually supposed to occur.

As to the cause of the tachycardia, the following are facts of note: (1) there was no previous history of rheumatism; (2) there was no evidence of a diphtheritic infection (throat-swab was negative to Klebs-Löffler bacillus); (3) while in the ward the patient developed a small carbuncle on his right forearm, and *Staphylococcus aureus* was recovered from his throat.

It is difficult to assess the value of any remedy in paroxysmal tachycardia, which is notoriously unresponsive to treatment and usually stops spontaneously; but it seems worth recording that in this case increasing doses of acetylcholine were followed by progressive slowing of the heart-rate. This supports the view that it is valuable in the treatment of paroxysmal tachycardia.

In conclusion, I wish to thank Dr. A. G. Gibson for permission to publish this case, and Dr. W. Stobie and Dr. A. M. Cooke for encouragement and advice in regard to the treatment.

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MYELOBLASTIC LEUKÆMIA

PRESENTING SOME UNUSUAL FEATURES

By J. H. WARD, D.S.O., M.C., M.B. Edin.

AND

A. KNYVETT GORDON, M.B. Camb.

MEDICAL SUPERINTENDENT, VIROL PATHOLOGICAL RESEARCH LABORATORIES; CONSULTING PATHOLOGIST TO THE GREAT WESTERN RAILWAY MEDICAL FUND SOCIETY AND TO VICTORIA HOSPITAL, SWINDON

THE CLINICAL ASPECT. (J. H. W.)

Mrs. A., aged 70, had been a patient of mine for 12 years. Except for attacks of bronchitis during the winter she required little medical attention. Towards the end of May, 1935, she complained of weakness.

At first I could find nothing to account for this, but in the first week of June I noticed she was anæmic and this anæmia became more evident. On June 12th I sent a sample of her blood to Dr. Knyvett Gordon for examination and received a report giving a provisional diagnosis of myeloblastic leukaemia with a grave prognosis. At this time she had no other symptoms but weakness. There was no sepsis in the mouth or elsewhere—no enlarged glands, no enlargement of spleen or liver, no hæmorrhage. The urine was free from albumin and sugar.

She was treated with intravenous and intramuscular injections of liver extract daily, with ferri et ammon cit. grs. 30 t.d.s., acid. hydrochlor. dil. m 30 t.d.s., p.c., and injections of calcium gluconate. Clinical response was, however, very slight; her anæmia and weakness continued to increase. On July 3rd the spleen was palpable below the costal border, but the enlargement was temporary for later I could not feel it. She became unconscious on July 13th and died on the 20th.

I made a post-mortem examination on the same day

and found a considerable amount of fat, although no food had been taken for a week before death. The spleen was enlarged to the size of a small coconut and was very friable. The liver was slightly enlarged and very soft. The other organs showed no obvious abnormality. The humerus and portions of the liver and spleen were removed for microscopic examination.

THE PATHOLOGICAL ASPECT. (A. K. G.)

During the illness 22 blood films were examined and five total counts were made on oxalated blood. Subsequently, the liver, spleen, and bone-marrow were scrutinised.

The first set of films, taken on June 12th, showed polynuclears 38 per cent., lymphocytes 10 per cent., hyalines 1 per cent., and eosinophils 1 per cent., with 20 per cent. of myelocytes, 15 per cent. of myeloblasts, and 15 per cent. of myeloblastic plasma cells. The total counts were red cells 3,050,000, white cells 9200, hæmoglobin 51 per cent. A diagnosis of acute myeloblastic leukaemia was made and a fatal prognosis given. The 22 differential counts were then plotted on a graph, which showed a steady relative increase in the number of myeloblasts and corresponding decrease in the polynuclears and myelocytes, the figures for the last test, just before death, being myelocytes 10 per cent., myeloblasts 64 per cent., and plasma cells 3 per cent., with 10 per cent. of a primitive type of cell closely resembling, if not identical with, the lymphoidocyte. The lymphocytes remained steady throughout at about 10 per cent., mononuclears 3 per cent. An interesting feature was the occurrence of transient rises in the relative numbers of the polynuclears, corresponding to the injections of liver extract. The last total count, a week before death, showed red cells 1,475,000, white cells 17,100, and hæmoglobin less than 15 per cent.

Post mortem, the medullary cavity of the humerus was closely packed throughout the length of the bone with marrow of a pinkish-grey. In films and subsequent sections this was found to consist almost entirely of myeloblasts and a more primitive cell resembling the lymphoidocyte. Myelocytes were present, though their granules were scanty suggesting an intermediate form between the myelocyte and the myeloblast. Very few cells of the erythrocyte series were seen. An accurate differential count of the marrow films was scarcely possible on account of the number of dead cells which could not be identified.

The liver showed infiltration, both interlobular and inter-cellular, with myeloblasts; a moderate degree of fatty degeneration was evident and small scattered deposits of free iron were seen. In the spleen, the Malpighian bodies showed no histological abnormality, while the pulp was infiltrated throughout with myeloblasts. Free iron was not found.

The diagnosis of acute myeloblastic leukaemia was clear, the characteristic features in the blood being a steady transition from the granular polynuclear and myelocyte to the non-granular myeloblast and even back to a more primitive cell resembling the lymphoidocyte, together with an "aleukæmic" total count. As usual, the red cell factories became gradually exhausted, which was probably the immediate cause of death.

The last set of films were compared with some prepared from the blood of a lamprey, in which the leucocytes are practically all of the lymphoidocyte group, and the primitive cells of the patient corresponded very closely in type.

The case, presented some unusual features. Firstly, the age of the patient—the disease being uncommon after 25. Secondly, the absence of signs of sepsis in the mouth. This is very uncommon, as in the great majority of cases the illness begins with acute inflammation of the fauces and gums of the sloughing type and is, therefore, not infrequently diagnosed clinically as streptococcal infection, diphtheria, or Vincent's angina, and the condition of the

blood may escape investigation. I have, however, recorded a somewhat similar case¹ in which the age of the patient was 74 and there were no signs of sepsis. The patient died of a terminal pneumonia after a month's illness, with 92 per cent. of myeloblasts in the circulating blood. I have been unable to find any record of other cases occurring in old age.

As a rule, the patients die within a fortnight or so of toxæmia from the septic infection. This is not because sepsis is a cause of leukaemia—though sometimes it has been so described—but because myeloblasts and myelocytes have little or no antibacterial action, whether by phagocytosis or antibody formation. The evidence for this is twofold. If to a healthy subject an injection of sodium cinnamate or nucleinate is administered, the blood shows a marked polynuclear leucocytosis, but in myeloblastic and myeloid leukaemia no such effect is produced. Similarly, in health an injection of T.A.B. vaccine is followed by an increase in the titre of agglutinins to these organisms, whereas in leukaemia no response is evoked.

It is difficult to form any accurate conception of the general incidence of acute myeloblastic leukaemia, because it does not present itself clinically as a disease of the blood-forming organs, but rather as an acute infection. Even if the blood is examined, the absence of a leucocytosis may be misleading. Furthermore, if the slide is overstained or the reagents are not fresh, the nuclear characteristics of the myeloblast may not be evident and the cell is then mistaken for a lymphocyte. In 80 cases of myeloid leukaemia which have come under my personal observation, 6 were found to be of the acute myeloblastic type. The distinction is of clinical importance, because with care and treatment by X rays, *controlled by frequent examinations of the blood*, it is often possible to keep patients of the ordinary myeloid type alive and fairly active for a period of years. In the myeloblastic variety there is no alternative to a rapidly fatal course and treatment can be only symptomatic.

PRIMARY CARCINOMA OF THE LIVER

DESCRIPTION OF AN UNUSUAL CASE

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SINCE the time when Virchow pointed out the importance of searching carefully for a primary source at autopsy on cases of liver growths, the histology of carcinoma originating in the liver has been well defined, and it is now recognised to be a rare disease. This fact, in addition to the unusual pathology observed, prompts me to publish the following case.

DESCRIPTION OF THE CASE

The patient was a man of 56 who complained of mid-epigastric pain of five months' duration, not associated with food. He suffered also from precordial pain and dyspnoea on exertion. There was no indigestion or flatulence, and he had never been jaundiced. Four days before admission to hospital he had an attack of severe pain in the left loin, mental confusion, and headache, associated with diminution of urinary output and a furred tongue. He had worked in a sulphuric acid works for the previous 18 years, and many years before had been

a heavy drinker, but until recently he had enjoyed good health.

Examination revealed some tenderness in the left loin. The right kidney was unduly palpable, but smooth and mobile and of normal size. No tumour could be felt above it. There was no clinical abnormality of the nervous system. The heart was not abnormal except for the occasional occurrence of multiple extrasystoles. The urea content of the blood was 47 mg. per 100 c.cm. The urine was sterile and acid. It contained 0.5 per cent.

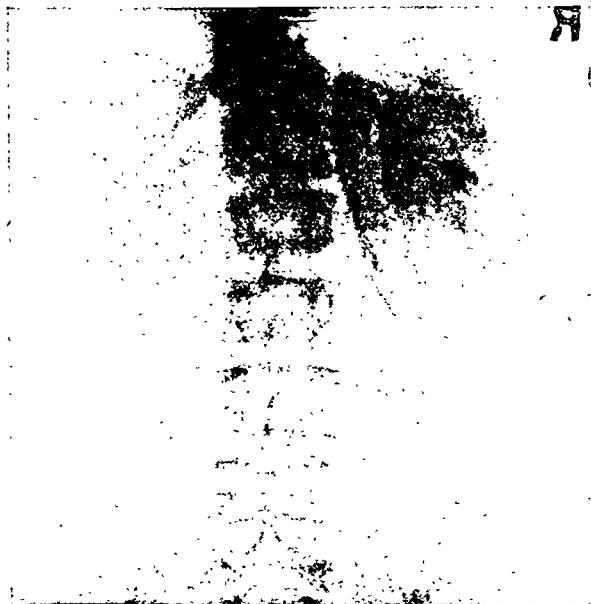


FIG. 1.—The right kidney, whose pelvis is filled with opaque solution, is being displaced downwards by an oval calcified tumour springing from the right lobe of the liver.

of urea, and there were pus cells and granular casts in the deposit. The average daily output was 1650 c.cm.

By cystoscopy a normal bladder and ureteric orifices were seen. The right ureter was catheterised without difficulty and a pyelogram was taken immediately afterwards (Fig. 1). A large oval stippled shadow is seen in the region of the right lobe of the liver displacing the right kidney downwards. It was assumed to be produced by a calcified hydatid cyst of the liver.

Before further investigations could be carried out the patient died quite unexpectedly, seven days after admission to hospital. The mode of death was suggestive of acute cardiorenal failure. The temperature and pulse-rate had not varied from the normal during the period of observation.

Post-mortem examination.—The heart was slightly enlarged, with pale, lax, dilated musculature. There was no coronary or valvular disease, and the aorta was normal. Except for some old adhesions of the left pleura, the lungs were normal. There was no ascites, and no abnormality of the gastro-intestinal tract, spleen, or pancreas. The liver was adherent to the diaphragm. An ovoid smooth tumour, size 14 × 9 × 7 cm., sprang from the under surface of the right lobe, pushing the liver upwards, the kidney downwards, and the inferior vena cava to the left. It was adherent only to the liver and diaphragm, and was easily separable from the other adjacent viscera. It was completely enclosed in a thin, irregularly calcified shell. On section there was a central branching core of gelatinous fibrous tissue surrounded by a homogeneous, soft, friable, vascular substance, maroon in colour. At no point was continuity demonstrable between this tumour substance and the surrounding liver; it was everywhere separated from it by the capsule. The rest of the liver was quite normal, and did not show any of the macroscopic changes of cirrhosis or new growth. No other abnormality was found except for a few patches of cortical

¹ Med. Press and Circ., 1931, cxxxi., 207.

necrosis in the left kidney over which the surrounding capsule was adherent.

Microscopical sections stained with hæmatoxylin and eosin show the tumour to consist of a degenerated oedematous fibrous core and epithelial cells growing in strands and small masses. The cells are irregular in size and shape, but mainly polyhedral, and resemble the cells of the liver parenchyma. Most of them have a circular eccentric nucleus with a well-marked chromatin network and nucleolus. Some have two or more nuclei, and giant cells of four or five nuclei are common. The cytoplasm is pale, uniform, and basophil. Much extravasated blood



FIG. 2.—Section of the growth ($\times 300$). Multi-nucleated giant-cells are seen, and much extravasated blood in the intervening spaces.

fills the spaces between the tumour cells (Fig. 2). Sections taken from various parts of the liver do not show any of the changes of cirrhosis.

DISCUSSION

Classification of primary carcinoma of the liver.—The following classification is suggested by Ewing:

- (1) Hepatoma, arising from the cells of the liver parenchyma.
- (2) Cholangiona, arising from the intrahepatic bile-ducts.
- (3) Mixed type, containing elements of both.

Each of these types may occur as a solitary adenomatous or carcinomatous tumour, as a massive infiltrating growth, or as multiple nodules. Cirrhosis coexists in 85 per cent. of hepatomas and 50 per cent. of cholangionomas (Eggel). It is uncertain which of the two main types is commoner, but more cases of the hepatoma group have been reported.

Clinical features.—There is no characteristic clinical picture. Wasting, anemia, and pain in the epigastrium or right hypochondrium with ascites may indicate the presence of a malignant tumour. Jaundice is present in 61 per cent. of cases, and is commoner in cholangionomas than in hepatomas. The spleen is enlarged in a third of the cases. Fever and leucocytosis are found in 14 per cent., and are associated with rapidly growing necrotic growths.

Four well-defined clinical types can be distinguished:

- (1) No symptoms are referable to the growth, and the patient dies after a short illness, as in the case here described.
- (2) Carcinoma of the liver is found at autopsy on patients dying from other conditions.
- (3) A well-marked history of cirrhosis ends rapidly with hepatic tumour, wasting, jaundice, and ascites.
- (4) An obviously malignant enlargement of the liver develops in a previously healthy patient. These are

usually mistaken for the much commoner cases of extensive secondary deposits in the liver without an apparent primary growth.

Nature of primary liver growths.—The sequence of cirrhosis, regenerative nodular hyperplasia, multiple adenomata, and carcinoma is a well-recognised fact, and serves to explain the origin of those cases in which carcinoma is found in association with cirrhosis. In districts where parasitic diseases such as distomiasis and schistosomiasis are common causes of liver damage, primary carcinoma is relatively frequent. Thus L. W. Smith states that the ante-mortem diagnosis is readily made in the Philippine Islands, while Strong and Pitts point out that the disease is unusually prevalent amongst Chinese patients at the Vancouver General Hospital.

There occur cases, however, in which cirrhosis seems to be a secondary process resulting from the mechanical stimulus of the tumour itself, while it is absent in some 15 per cent. of liver-cell and 50 per cent. of bile-cell growths. For these a different mode of origin must exist. It is likely that many carcinomas not associated with cirrhosis result from the malignant transformation of a solitary adenoma, the process taking many years to evolve. Pepere goes so far as to state that all solitary adenomas of the liver are congenital, while congenital malignant adenomas have been recorded by Ribbert, Prescott, Karsner, Milne, and others. In the tumour here described, the presence of a complete calcified capsule is indicative of many years' duration, yet the microscopical appearance was one of active malignancy, and it is likely that the growth originated in a congenital adenoma which eventually underwent malignant transformation.

It is rare for primary liver carcinomas to metastasise, and extrahepatic metastases are found in only 20 per cent. of cases. The method of spread is by vascular embolism, the liver, lungs, and regional lymph glands being most commonly invaded. Distant metastases of hepatoma have the property of secreting bile and thus present an interesting analogy with metastases of thyroid carcinoma.

SUMMARY

A case is described of primary carcinoma of the liver presumably originating in a congenital adenoma. The clinical features and pathological nature of these rare growths are discussed.

I am indebted to Mr. Philip Hawe, of the David Lewis Northern Hospital, Liverpool, for permission to publish notes of this case.

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QUEEN MARY'S HOSPITAL, FOR THE EAST END.—The Duchess of Marlborough presided at the festival dinner in aid of this hospital held at the Hotel Victoria on Nov. 23th. The institution serves a population of nearly 2,000,000 and requires an annual income of £50,000. A sum of £25,000 is required to clear off arrears and another £15,000 to build operating theatres, which are urgently needed. Subscriptions amounting to over £7000 were announced at the dinner.

MEDICAL SOCIETIES

TUBERCULOSIS ASSOCIATION

At a meeting of this association held at Manson House on Nov. 22nd, papers were read by Dr. E. L. MIDDLETON (H.M. Medical Inspector of Factories) and Dr. P. HEFFERNAN on

Industrialism and Tuberculosis

Dr. Middleton said that, after spending nearly fifteen years in matters relating to industrial hygiene, he had been impressed by the importance of the effect of certain occupations on the health of those taking part in them, and he wished particularly to emphasise the necessity for medical men to have some knowledge of the occupations in which their patients had been engaged. The occupational history might be quite as important as any other part of the past history of the patient. In certain scheduled industries, selection of individuals was carried out by statutory medical examinations of persons within two months of their employment. In these industries, which included occupations in which the workers were exposed to silica and asbestos dusts, the law provided for periodical medical examinations, at which the worker would be suspended if he was found to be suffering from tuberculosis or from pure silicosis to such a degree as to make it dangerous for him to continue work in that industry. There was a definite relationship between the occupational risk and the health of the individual. The two important factors in the spread of disease were, the opportunities for infection and the susceptibility of the individual to infection. Occupation might have a bearing on each of these factors, both in a general and in a special sense: in a general sense through proximity, the presence of infected dust, or defective work-room conditions which lowered the vitality and diminished the resistance of the workers; and in a special sense, among those whose occupation rendered them more liable to suffer from tuberculosis, as, for example, in a metal-grinding factory in which grindstones were used. Here not only would the chances of infection be greater than among the general population, but also the workers had been rendered specially susceptible to tuberculosis because they had inhaled siliceous dust and were, in fact, subjects of silicosis, whether in a diagnosable stage or not.

The real hazard to which workers in the silica group of occupations were exposed was silicosis and, strictly speaking, not tuberculosis. The association of the two conditions had been held to be so close that tuberculosis was taken as an index of the incidence of silicosis in certain industries. There were, however, all shades of opinion on this relationship. In a recent article, E. L. Collis and G. Udny Yule (*Jour. of Indust. Hyg.*, 1933, xv., 395) had presented the mortality experience of an occupational group exposed to silica dust, as compared with that of a group exposed to dust not containing silica, and with that of the standard population of England and Wales. This study threw into sharp contrast the unfavourable position of persons employed in six selected groups of occupations exposing them to silica dust compared with workers in five selected occupational groups who were exposed to non-siliceous dusts. The excess mortality in the former class, though not confined to diseases of the respiratory system, was particularly notable in the figures for respiratory tuberculosis.

Dr. Middleton then threw on the screen slides illustrating the various processes in certain industries. In the *pottery industry* the occurrence of silicosis was especially associated with two sub-groups: earthenware and china. The *sandstone industry*, which included the quarrying and dressing of sandstone, represented perhaps the most widespread of all the silicosis-producing industries. Dust was produced in all processes in which the stone was cut, and in some of these processes the concentration of the dust cloud reached high limits. In the *granite industry*, in which the processes corresponded with those in the sandstone industry, the incidence of silicosis was not so severe. In both these industries silicosis was most frequent among the masons. The reason for the less severe involvement of the lungs in granite workers as compared with sandstone workers might be related to the composition of the dust. In granite, the amount of free silica rarely exceeded one-third of its weight, the other constituents being silicates, in which silica was present in chemical combination. *Grinder's rot*, the name formerly given to silicosis occurring in metal-grinders on sandstone, was a type frequently associated with tuberculosis. Grindstones made of sandstone had, however, been largely replaced by grinding wheels of artificial abrasive, such as carborundum and alumina, which contained almost no silica. *Sand-blasting* was at present the most serious cause of silicosis. The occupation was confined to a comparatively small number of workers, but had a high rate of mortality, and the onset of the disease followed a shorter period of exposure than occurred in almost any other of the silicosis-producing industries. *Manufacture of scouring powders*. This was a small industry, and from the point of view of silicosis it was not now important owing to the measures which had been taken to control dust produced in the processes. *Coal-mining*. The occurrence of silicosis was now well recognised amongst coal-miners, especially in the South Wales coalfield and in Europe and America. In the 3½ years ended December, 1934, the Silicosis Medical Board issued 702 certificates on account of silicosis in coal-miners, and, of these, 602 were in the South Wales area.

SILICOSIS AND DUST RETENTION

Dr. HEFFERNAN said that the main problem in industrial tuberculosis was the silicosis problem. It appeared to him that most of the prevailing confusion, controversy, and difference of opinion regarding pneumoconiosis and its relation to tuberculosis could be traced to a confusion between two entirely different conditions—silicosis and dust retention. Silicosis was an active and dynamic process with a specific histopathology, produced by the inhalation of free silica, or possibly its chemical equivalent, in a very fine state of subdivision. It was usually said that the dust particles must be below 2 microns in diameter to affect healthy lungs; below that limit, the smaller the dust particles, down to submolecular dimensions, the more active and rapid the development of the condition. Dust retention, on the other hand, was a passive process occurring typically in diseased lungs. Healthy lungs were capable of dealing with all forms of dust except that of free silica, or possibly certain combinations of silica-like asbestos, which when powdered might be capable of acting chemically as free silica did. The fibrosis produced by silica dust was characteristically nodular, was situated mainly subpleurally in the little collars of lymphoid tissue surrounding the necks of the infundibuli, gross obstruction of the root lymphatics and hilum glands being slight or absent. The fibrosis associated with dust retention was not nodular, was situated mainly at the roots of the lungs, and tended to spread outwards. The hilum lymphatic glands were affected and were greatly enlarged and packed with dust, general

thickening of the mediastinal mass following. In typical simple silicosis there were few pulmonary symptoms, apart from advancing dyspnoea and some cyanosis. In dust retention, in addition to the symptoms of pulmonary fibrosis, there was the presence of symptoms of the antecedent pulmonary disease—emphysema, chronic bronchitis, bronchiectasis, pulmonary tuberculosis. Finally, silicosis definitely predisposed to the development of pulmonary tuberculosis late in life, which dust retention per se did not do.

Although, however, these two conditions were entirely different, yet the problem was complicated by the fact that all lungs subject to silica dust were not healthy, and the reaction to silica of an unhealthy lung could be very different from that of a healthy lung. The specific fibrosis now tended to be massive in the diseased areas while still remaining discrete and nodular in the healthy areas, and the phenomena of dust retention were added to those of silicosis. They had therefore at one end of the scale, simple silicosis, with its liability to tuberculosis; at the other end simple dust retention with no such liability; and in between, various intermediate conditions, determined mainly by the two variables—the condition of the lung previous to and during exposure, and the proportion of free silica in the dust, with the size of its particles and possibly its freshness. The prevention of simple silicosis in healthy workmen obviously lay in the elimination of the dust of free silica in the atmosphere in which they worked, and in this direction great progress had been made; while to prevent the employment in dusty industries, such as coal-mines, of men with lungs already diseased, a careful "hand-picking" of the men at entry would be necessary, with periodic medical re-examination and elimination of all persons suffering from any form of pulmonary affection.

These conclusions, said Dr. Heffernan, were based upon 17 years' service as tuberculosis officer in Derbyshire, with a fairly extensive study of the literature. There were over 40,000 coal-miners in Derbyshire, and over 2000 limestone workers. They had never had a single case of silicosis reported in a coal-miner or a limestone worker, and their tuberculosis death-rate was normal or below normal. On the other hand, they had a few hundred gritstone masons and stone-cutters. Twenty-five years ago the death-rate from pulmonary tuberculosis among these men was more than ten times that amongst the adult general population of Derbyshire; and for the decade ending 1921 it was still five times the adult pulmonary tuberculosis death-rate. He was convinced that the freedom of coal-miners from terminal pulmonary tuberculosis was not, as had been suggested, because coal dust neutralised or minimised the toxins of the tubercle bacillus. The real reason was that, save in the mines where the men had to drill seams of quartzose rock, they did not suffer from true silicosis at all.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

THE November meeting of this society was held at Sheffield.

Unilateral Menstrual Pain

Prof. MILES PHILLIPS said that this term, although somewhat clumsy, was the best he could devise for a certain clinical group of cases in which severe pelvi-abdominal pain occurred solely in association

with the menstrual periods, only and always on one and the same side. Two principal conditions were liable to cause such pain—namely, localised cornual adenomyoma, and hæmatometra in the rudimentary horn of a double uterus. Careful and understanding analysis of the patient's symptoms lead one to make a provisional diagnosis sufficiently correct to justify an exploratory operation. Prof. Phillips described in detail a number of cases in which the main symptom was fairly severe pain just at the onset of menstruation, in which, at laparotomy, typical adenomyomata were found in the uterus and excised with complete relief of the symptoms. Hæmatometra in the atretic horn of a double uterus was, he said, commonest on the right side, leading to a confusion with appendicitis and removal of this organ, with subsequent persistence of the symptoms which were alleviated only by removal of the rudimentary horn later.

Dr. J. W. BRIDE (Manchester) referred to a case of a calcified foetus with a rudimentary horn, in which the patient's main symptom was dysmenorrhœa.—Dr. K. V. BAILEY (Manchester) asked whether endometrioma of one ovary could possibly cause unilateral dysmenorrhœa.—Prof. LEYLAND ROBINSON (Liverpool) said he thought the characteristic thing about these cases was that there was no variation in the menstrual pain, except perhaps that it got progressively worse.—Prof. DOUGAL, Mr. STACEY, and Mr. GLYN DAVIES mentioned that they had also come across cases of dysmenorrhœa with causes similar to those Prof. Phillips had described.

Chorio-Angio-Fibroma

Dr. C. H. WALSH (Liverpool) described a case of chorio-angio-fibroma, and said that the solid tumours of the placenta were extremely rare. They were of interest pathologically, and clinically they might be associated with abnormal states of the pregnancy and difficulties in the labour.

The specimen was obtained from a patient after delivery of her second child. The tumour of the placenta could be felt in the early stages of the labour through the external os. The labour was normal and the puerperium uneventful. The placenta with its two tumours weighed 2½ lb. One tumour was the size of a grape-fruit and the other the size and shape of a cricket ball. They were embedded in placental tissue and there was a definite pseudo-capsule. The placental tissue was not infiltrating the tumours which could be shelled out easily. The cut surface was solid and looked like a soft fibroid. Microscopically they were found to consist of fibrous tissue with oval cells. In parts there were numerous blood-filled capillaries. The tumours appeared to be angio-fibromyomatous.

Advanced Ectopic Pregnancy

Three cases of advanced ectopic pregnancy were described.

(1) Mr. N. L. EDWARDS (Derby) described a case of a 5-para, aged 42, who passed per rectum portions of the foetus, which was subsequently found to be lying in an extra-uterine sac.

(2) Mr. GLYN DAVIES stated that his patient, who was 26, was a 2-gravida. Her last menstrual period had occurred 23 weeks before, and she had had several shows. Radiography suggested death of the foetus which was presenting by the breech. As the pregnancy was thought to be intra-uterine, an attempt was made to induce the patient but failed. Subsequent examination under anaesthesia led to the diagnosis of ectopic gestation. At operation it was found to be a right-sided ovarian pregnancy, advanced to about the thirtieth week.

(3) Prof. A. M. CLAYE (Leeds) said that his patient was a primigravida, aged 25, who was complaining of abdominal pain for the last three months. There had been some hæmorrhage on several occasions preceded by six months' amenorrhœa. The patient could feel fetal movements.

When seen in September, 1934, the case was diagnosed as one of missed abortion. Attempts were made to induce labour. Subsequent examination under anaesthesia, and radiograms, led to a diagnosis of ectopic gestation. At operation the amniotic sac was found amongst the intestines from which the macerated fetus was removed. The placental site was in the neighbourhood of the left Fallopian tube and the placenta and most of the sac were removed. Haemorrhage was not excessive. Convalescence was uninterrupted. The points of interest in this case were: (1) the diagnosis (which was not reached for a very long time), and (2) the treatment at operation.

The PRESIDENT said that in cases where the condition was not diagnosed until some time after viability he wondered whether the operation could be delayed in order to obtain a live child.—Dr. BRIDE said that in his experience the condition was difficult to diagnose. He thought it safer to leave the placenta in situ when operating on these cases.—Prof. PHILLIPS said that he had seen six cases of advanced ectopic pregnancy. On three occasions he had left the placenta behind and had no trouble subsequently.—Mr. J. ST. GEORGE WILSON (Liverpool) mentioned a case which he first saw half-way through the pregnancy. He opened the abdomen at term and found the fetus in the broad ligament. He was able to deliver the baby alive and left the placenta in the abdomen. Later he had occasion to reopen the abdomen and found no sign of the placenta.—Prof. D. DOUGAL (Manchester) referred to a case in which bougies were introduced and passed through the fundus of the uterus. An abdominal operation had to be performed and the sac containing the placenta, together with the uterus, was removed.

Dr. BRIDE showed a stone, weighing 4 oz., removed from the bladder by suprapubic cystotomy. Its presence was first noticed when a radiogram was taken during the last weeks of pregnancy. Caesarean section was carried out.

LIVERPOOL MEDICAL INSTITUTION

At a meeting of this institution on Nov. 14th, with Dr. C. O. STALLERASS, the president, in the chair, a lecture-demonstration on

Cineradiography

was given by Dr. RUSSELL REYNOLDS (London), who described his method of obtaining cinematographic records of X ray pictures by photographing the screen image. A 16 mm. cinematograph camera is used, and it is only necessary to take a short length of film of any one subject. The short film can then be formed into a band and run through the projector continuously so that the cases may be studied at leisure. Thus the expense of operating the apparatus is reduced to a minimum. Exposures of various parts of the human body have been made; and Dr. Reynolds stated that the joints, movements of the heart and thorax, the act of swallowing, and the passage of an opaque meal through the oesophagus, stomach, and duodenum had all been demonstrated satisfactorily. He thought that the method had many possibilities in diagnosis and for the study of physiological problems.

In the discussion which followed, Dr. R. E. ROBERTS spoke of the high quality of the radiograms obtained. Far from there being any graining or blurring, such as one would expect from photography of a screen image, many of the pictures were as clear as if they had been made under the most favourable conditions of direct radiography. In Dr. Roberts's opinion,

the method would find its greatest usefulness in examination of the thoracic contents. Much new information should be obtainable, for example, about the movements of the heart.

Malignant Effusions

At a pathological meeting on Nov. 21st, with the president in the chair, Dr. R. Y. DAWBARN read a paper entitled *Some Observations on Malignant Effusions*. The examination of peritoneal fluid or pleural fluid for cancer cells need not be abandoned, he said, as a hopeless task. It was certainly almost impossible to recognise these cells in stained dry films, because the endothelial cells were too confusing; but many good results might be obtained by the comparatively old method of cutting paraffin sections of the centrifuged deposit.

After centrifuging the fluid in a large tube (about 1 in. in diameter with a round bottom) the supernatant fluid is poured off and the deposit washed in saline. The centrifuging is repeated if necessary. The saline is then replaced by Zenker's fluid and the deposit carefully separated from the bottom of the tube, without breaking, by means of a platinum wire. The deposit is left in the fixative over-night, after which it is treated with iodine in 50 per cent. alcohol, dehydrated, and embedded in paraffin. Sections are cut and may be stained with Weigert's iron hæmatoxylin.

Tumour cells might be recognised by various criteria: (1) they might be found in clumps, reproducing gland acini or the solid alveoli of carcinoma; (2) mitotic figures were an important, though not infallible, sign of tumour cells; (3) they often had hyperchromatic nuclei and might be far larger than any endothelial cells; (4) karyorrhexis was common in tumour cells, but rare in endothelial cells; (5) vacuoles occurred both in endothelial cells and tumour cells, but in the latter they might be very large and irregular in shape. Dr. Dawbarn showed sections illustrating the above points, including one made from the ascitic fluid of a case of Hodgkin's disease, in which a mitotic figure could be seen, apparently in an endothelial cell—a finding which must, he said, be very unusual.

WOLVERHAMPTON AND DISTRICT CLINICAL CLUB

At the first meeting of the winter session, with Dr. S. C. DYKE in the chair, a discussion on Diseases of the Thyroid Gland was opened by Dr. J. H. SHELDON. The commonest exciting cause of exophthalmic goitre was, he thought, mental shock, the next in order being chronic septic infection—e.g., from the tonsils. The correct treatment of the disease was at present surgical, but there was some indication that pituitary disorder was at the back of exophthalmic goitre, and that ultimately the treatment might be medical by means of an antihormone. Ergotamine tartrate was of use in intractable cases.—Mr. R. MILNES WALKER believed that septic foci should be eradicated before operation, except in very acute cases. The chief indication for early surgical interference was rapid loss of weight. Preoperative treatment with iodine was essential, and Avertin was of great service in anaesthesia.—Dr. C. M. RIGBY, speaking of X ray treatment, said that the early cases were the most successful. Preliminary iodine medication, discontinued during treatment, was as essential as before operation.—Dr. W. R. SOMERSET mentioned cases which had improved after tonsillectomy.

REVIEWS AND NOTICES OF BOOKS

Hæmochromatosis

By J. H. SHELTON. M.D. Lond., F.R.C.P. Lond., Hon. Physician to the Royal Hospital, Wolverhampton, and the Guest Hospital, Dudley; late Hunterian Professor, Royal College of Surgeons of England. London: Humphrey Milford, Oxford University Press. 1935. Pp. 382. 25s.

THE monograph on hæmochromatosis by J. H. Sheldon will surely become recognised as the classical account of this mysterious disease. Dr. Sheldon says in his preface, and none will disagree, that without adequate case records it is impossible to construct a faithful description of any diseased state. He has collected 311 such records, which he accepts as genuine, from the literature, and has analysed them in order to present as complete a picture as possible of the clinical features and pathological appearances characteristic of hæmochromatosis. He discusses also the knowledge available concerning the metabolism and chemical findings, and the experimental work that has been done in an attempt to produce a similar picture in animals. Finally, he allows himself the pleasure, as he says, of "coming off the fence" in a discussion of the pathogenesis of hæmochromatosis. He concludes that it should be classed as an inborn error of metabolism affecting the inner metabolism of probably all the cells of the body (with the possible exception of nervous tissues), which shows itself by a disturbance of the metabolism of melanin and by the formation of iron containing pigment in nearly all the tissues. Neither of these pigments is peculiar to hæmochromatosis, and though the disturbance of metabolism is congenital in origin, he considers it does not produce of itself any disturbance of health, beyond initiating a process of cirrhosis in many organs and leading in time to accumulation of pigments, which ultimately give rise to the well-known triad of symptoms. In spite of the comparative rarity of hæmochromatosis, this scholarly study should interest workers in many fields, since the disturbance in iron metabolism appears to be accompanied by other profound changes in certain of the inorganic constituents of the body, notably copper, calcium, sulphur, sodium, and possibly magnesium.

The book is most carefully documented throughout, and completed with a bibliography of nearly 600 references. It can be recommended both to research workers and clinicians as a clear account of the present knowledge of a rare but key disease, an understanding of which should throw light on many aspects of the fundamental problems of cell metabolism.

A Textbook of Physiology

Fifth edition. By WILLIAM D. ZOETHOUT, Ph.D., Professor of Physiology in the Chicago College of Dental Surgery (Loyola University). London: Henry Kimpton. 1935. Pp. 694. 18s.

TEXT-books of physiology are usually dominated by the position of physiology in the medical curriculum, a previous knowledge of elementary biology, physics, and chemistry being taken for granted. Only in some of the larger "complete" text-books and the small popular works is the subject treated *ab initio*. The present volume furnishes an exception to this rule, for it is of medium size and yet quite general in its scope, and while it would be incorrect to say that no

previous knowledge is required to read it, it is evident that considerable trouble has been taken to explain clearly that part of the subject known as "general physiology," and to provide introductory chapters on general biology and histology. This naturally detracts from the scope of the sections on the several systems of the body, particularly as they often need a short introduction, but these are well balanced in relation to each other and to the rest of the book, and sufficient references are given to monographs and reviews to put the student in a position to enlarge his knowledge.

Nowadays a considerable and growing interest in physiology is being manifested by many groups of students who have other objects than the practice of medicine as their aim, and to them this book may be recommended as a clear and comprehensive exposition of the subject, sufficiently detailed for ordinary purposes. Practical applications to everyday life, as in the sphere of nutrition, are indicated, and there are useful glossaries of technical terms, prefixes, and suffixes for those who might find the text difficult. It should be emphasised however that the book is not a "popular" work, but is intended for serious study by those "having a limited length of time for the acquisition of a basic knowledge of the subject," and is suitable for examination work. The text is generously illustrated, and in the main the figures are well chosen, the only criticism being that there are photographs and drawings of apparatus with which the student should be brought into personal contact, and which might therefore be considered redundant. The spelling, and in many places the terminology, is American.

The main features of the book may be summarised by saying that it is straightforward, of reasonable and convenient size, and complete in itself, neither introductory nor auxiliary—of the biochemical or special sense—texts being essential to supplement it.

Recent Advances in Laryngology and Otology

By R. SCOTT STEVENSON, M.D., Ch.B., F.R.C.S. Edin., Surgeon, Metropolitan Ear, Nose, and Throat Hospital; late First Assistant, Ear, Nose, and Throat Department, University College Hospital. London: J. and A. Churchill Ltd. 1935. Pp. 346. 15s.

Mr. Scott Stevenson says he has spent over five years in the preparation of this book; the outcome of his toil is a well-presented summary of modern work in oto-laryngology. Little has been included which could be called unworthy of classification as a "recent advance," though a more berterial attitude would have been welcomed in places. At the end of each chapter is a paragraph of conclusions, but too often this is merely a summary of the preceding matter. The chapters on X ray and radium treatment of malignant growths are good. The broad general principles are well considered, and enough detail is given to illustrate the points. Those wanting to master the subject will find it necessary to study the original papers, as results are largely governed by attention to detail; it is therefore satisfactory that the references given are numerous and well chosen. In connexion with the radiological examination of the nasal accessory sinuses German workers have received less than their due recognition, but the work of the Americans is fully reported,

including Proetz's method. The author hardly lays sufficient stress on difficulties of interpretation; experienced workers find that X ray pictures must be considered in relation to operative and post-mortem findings if the fullest information is to be extracted from their study. The description of Ferris Smith's external ethmo-fronto-sphenoidal operation is too elaborate for a procedure whose rationale is far from established. On the other hand, the Proetz method of displacement treatment is too briefly dismissed. A warning in this chapter concerning unskilled nasal operation due to lack of training might have been amplified in general terms to cover the whole specialty. In this connexion some consideration of the organisation of research and teaching units in this country compared with those abroad would be valuable in a future edition.

Mr. Scott Stevenson has performed with some address the difficult task in reviewing the recent work on the physiology of hearing and the function of the labyrinth. The results reported in these fields are confusing, and it is a help to find the separate contributions of many research workers so ably sifted. The Wever and Bray phenomenon is clearly discussed, and the work in progress at Harvard and Johns Hopkins following upon this discovery is noted. McNally's experiments on utricular function are briefly described with his conclusion that the utricle acts in opposition to the contralateral vertical semicircular canals. The Ballance-Duel nerve-grafting method in the treatment of facial palsy has a useful chapter to itself.

Very few omissions of any importance can be detected. Some misprints will doubtless be corrected in future editions. The index is good and the book as a whole a most creditable production.

A Briefer General Psychology

By GARDNER MURPHY, Columbia University.
New York and London: Harper and Brothers.
1935. Pp. 572. 10s. 6d.

THIS book shows admirably the links between physiology and psychology. It is clearly written, and the subject is developed in the simplest possible way. Those who have studied physiology will find many experiments described with which they have already become familiar, and will be interested in their interpretation from a new angle. Indeed, one would recommend the book with less reservation to medical students than to other readers, for not only will it harmonise with their other preclinical studies, but they will be in a better position to read it critically. The author claims, quite fairly, that he has presented only such material as furnishes common ground for the beliefs held by the majority of psychologists, but some physiological theories are taken too readily and accepted as facts on which to base certain conclusions. Nevertheless, no unreasonable interpretations are made, experimental evidence is introduced wherever possible, and this is not bent to the support of any particular "school." The aim of presenting only general principles is well maintained, but the scope of the various specialised branches of the subject—child psychology, social psychology, &c.—is indicated.

An unusual amount of trouble has been taken to help the serious student. The subheading of each section is given in the table of contents, illustrations are numerous and have exceptionally full legends, while references to other works and a summary are provided at the end of each chapter. The only

feature unlikely to appeal to the English reader is the list of questions also appended to each chapter, an aid to learning usually found in less authoritative works and not in the tradition of university education in this country. The index is also a glossary, and is preceded by an extensive list of references to literature each relating to a statement in the text whose page, paragraph, and line is specified. The student is, therefore, not only encouraged to learn thoroughly, but also to investigate for himself. These features, together with the sane and interesting way in which the book is written, should carry it not only to the shelves of avowed students of psychology, but also to those of others who feel that an elementary knowledge of the subject is essential.

High Blood Pressure and its Common Sequelæ

By HUGH O. GUNWARDENE, M.B., B.S. Lond.,
D.M.R.E. Cantab., Clinical Assistant, National
Hospital for Diseases of the Heart, London,
1917-24. London: Baillière, Tindall and Cox.
1935. Pp. 172. 7s. 6d.

THIS is a good and clinically useful little book. The author rightly insists that it is the height of the diastolic rather than of the systolic pressure which is the true index of hypertension, the former being notoriously more stable than the latter. He regards a persistent diastolic pressure of 90 mm. Hg as the lower limit of abnormality and considers that if it rises to 115 it never returns to normal. He makes much of the hypertensive factor as a cause of heart disease and quotes the astonishing figures of Major and Fahr to the effect that there are 10 million persons with high blood pressure in America. Dr. Gunewardene states that when the diastolic pressure reaches 135 mm. Hg prognosis will have to be based on a general examination of the patient, but surely this is true of all cases of hypertension? The importance of differentiating renal from non-renal hypertension is emphasised and an excellent differential diagnosis table is supplied on p. 69. Like others, the author finds non-renal hypertension rare in those under 30 years old. In common with most pathologists and many clinicians, he disapproves of the term "malignant hypertension." Without going too deeply into aetiology, he believes that overfeeding and sedentary habits may be a causative factor in high blood pressure and makes out a good case for this hypothesis. Chapter V. contains an interesting piece of clinical observation on the influence of occupation and manner of living on the height of the blood pressure. In the author's experience, occupations involving more than ordinary physical exercise tend to produce blood pressures lower than normal. All would agree that prognosis is bad when retinal hæmorrhages and exudate are present, but the fact that solitary hæmorrhages which clear up may occur in cases of simple hypertension is not mentioned. Dr. Gunewardene has not seen strokes occur in patients with diastolic pressures of less than 115 mm. Hg. This is an observation deserving further inquiry. Chapter XV. contains a study of acute œdema of lungs which, apart from acute infections, is believed to be due often to persistent hypertension. In the chapter on prognosis he says that when cardiac failure or enlargement are present, strokes are less likely to occur—a statement difficult to prove. He believes that all cases of hypertension require treatment or, at least, medical supervision, and that when the blood pressure is raised attempts to reduce

it by natural means such as regulated exercise, dietetic restriction, and curtailment of business cares, should always be made. He thinks that the blood pressure can sometimes be lowered by the removal of septic foci and quotes O'Connor on prostatectomy as a means of lowering blood pressure raised as a result of renal damage in cases of prostatic enlargement. Dr. Gunewardene believes in the use of vasodilator drugs; when he condemns rigid systems of dieting he is, perhaps, on less controversial ground. On p. 73 the word "starving" is used when "fasting" is obviously intended. There is an adequate index but no bibliography.

A Textbook of Clinical Neurology

Third edition. By ISRAEL S. WECHSLER, M.D., Professor of Clinical Neurology, Columbia University, New York; Attending Neurologist, Neurological Institute and Montefiore Hospital. London: W. B. Saunders Co., Ltd. 1935. Pp. 826. 30s.

THE book has been thoroughly revised since the last edition and a number of minor and major clinical syndromes as well as new and old references have been added. It is perhaps impossible to attain to a completely satisfactory arrangement of the subject matter of a text-book of neurology, since nervous diseases may be considered from a nosological, pathological, anatomical, or physiological point of view. Dr. Wechsler adopts the anatomical arrangement, which has the merit of being traditional, though its drawbacks are exemplified in the treatment of amyotrophic lateral sclerosis and progressive muscular atrophy in separate sections in one part of the book, while pseudo-bulbar palsy and progressive bulbar palsy are treated in separate sections in another part. It is a pity, too, that subarachnoid hæmorrhage should be described in detail under the heading "Spontaneous meningeal hæmorrhage" in isolation from intracranial aneurysm which is its commonest cause. These, however, are minor defects in a book which gives a concise and up-to-date account of disorders of the nervous system. To deal adequately with the neuroses as an appendix to a book of organic nervous disease is perhaps, in the state of our knowledge, an impossible task. Dr. Wechsler draws largely upon Freud for his psychopathological theories, and Freudian perhaps more than any other psychological ideas suffer from compression and dogmatic statement. The clinical manifestations of the neuroses, however, are well described. A valuable new feature of this edition is an introduction to the history of neurology.

The book, which is well printed and illustrated, can be recommended especially to students.

Sex in Prison

By JOSEPH F. FISHMAN, formerly Inspector of Federal Prisons. Introductory Essay by ERNST TOLLER. London: John Lane, The Bodley Head Ltd. 1935. Pp. 256. 12s. 6d.

THE reader of this book is led to suppose from an introductory note about the author that he has an extensive first-hand experience of his subject; but the book itself conveys a different impression. Though Mr. Fishman writes with a delicacy which is perhaps intentionally absent from a short introduction supplied by Ernst Toller; though he has ideas about prison reform which, he declares, would appear advanced to American penologists, his account of the sex life of prisoners is superficial and repetitive.

Much of the information is second-hand, and there are too many references to the works of sociologists and psychiatrists who have had no direct contacts with prison life. The book is entirely based upon American material, and deals almost entirely with men. It would have been more effectively written by a prison doctor of experience whose daily work brought him into intimate personal contact with prisoners.

The Spleen and Resistance

By DAVID PERLA, M.D., Associate Pathologist and Bacteriologist, Montefiore Hospital; and JESSIE MARMORSTON, M.D., Associate in Pathology, Cornell University Medical College. London: Baillière, Tindall and Cox. 1935. Pp. 170. 9s.

THE exact functions of the spleen in health and disease are ill-defined. Perla and Marmorston have made a gallant attempt to analyse the evidence concerning the importance of this organ in the mechanism of defence of the body to infection. They first review the normal anatomy of the spleen and the pathological changes occurring in infections, and then discuss its function as an organ of macrophage tissue, its rôle in antibody formation, and the effect of splenectomy in animals on natural resistance. They show clearly that splenectomy in many species of mammals converts a latent infection into manifest disease. The importance of this conclusion should be appreciated by workers in many different fields. It becomes, for instance, questionable, in view of the facts now collected, whether the spleen plays the rôle in hæmoglobin formation previously attributed to it; for this hypothesis was based upon a study of iron metabolism in splenectomised animals in which the presence of latent infection had not been excluded.

Though the impossibility of drawing definite conclusions must have made the writing of this monograph depressing, the authors will, without doubt, earn the gratitude of other workers for their painstaking and critical review of all available evidence.

The Foundations of Human Nature

By J. M. DORSEY, M.D., Associated Professor of Psychiatry, University of Michigan Medical School. London: Longmans Green and Co., Ltd. 1935. Pp. 488. 12s. 6d.

ON p. 30 of this book the author, who is associate professor of psychiatry in the University of Michigan Medical School, remarks that "the average man" is "only vaguely aware of the rich meanings and potentialities pervading the deep stirrings within him." And as he reads further the average man may congratulate himself in feeling that he has something better to do than wonder whether (p. 32) he "thinks and acts in harmony with the spirit of developmental history." In such wise the book goes on. The editor warns us that it will not make light reading. It certainly does not. The remarkable thing is that 400 pages of sheer wordiness lead to such excellent and familiar common-sense conclusions as that the best place for a child is where he loves the grown-ups and they love him, and that to be religious is to act naturally. But do these simple truths need so much rigmarole?

"The Biology of the Individual," by J. Ramsey Hunt and others, of which a review appeared in our issue of Nov. 23rd (p. 1182), is published in this country by Messrs. Baillière, Tindall & Cox.

THE LANCET

LONDON: SATURDAY, DECEMBER 7, 1935

THE RENAISSANCE OF MEDICINE

"The aims of medical science . . . are to increase and perfect our knowledge (with a view to its control) of disease in man, and equally our knowledge of man in disease, by every legitimate means of science and art at our disposal."

THIS definition is taken from the inaugural lecture delivered on Nov. 26th by the new regius professor of physic at Cambridge, and already available, attractively produced, in book form.¹ Prof. RYLE is satisfied that the vast majority of honest workers, whether at the bedside or in the laboratory, subscribe to this ideal of medical science; excepting only those few who have made a trade of their art or who through some combination of mental peculiarity and faulty education indulge in cranks, or develop a fixed idea not in accord with ascertained facts. His further contention, that many who have the proper aim in view exhibit defective standards of accuracy and of judgment in interpreting evidence, is not likely to be disputed, though the proportion of the whole profession to which these criticisms are applied will vary with the prejudices of the commentator. While none regret the passing of the convention of infallibility at one time fashionable among physicians, some hold that the habit of mind that refuses to recognise failure and bases practice on the memory of successes that may well have been fortuitous has its uses, and can be disturbed only at the risk of still further diminishing efficiency by damaging self-esteem. That the "scientific" critic of the medical practitioner tends to take little account of the hourly need to comfort and cheer the patient makes it easy to ignore or even to ridicule his comments. But when such strictures receive corroboration from one who, like Prof. RYLE, is well aware of the dangers of discouragement at the present stage of medical practice, it is well to take notice. He wastes no abuse on those "whose judgment is continually crippled, rather than gradually amended, by the inherent difficulties of their subject and the exacting conditions of their lives" but seeks to ascertain to what primary errors their shortcomings are due. His verdict is, briefly: (1) faulty selection of men, or misdirection of their energies after qualification; (2) complicated and unwieldy systems of education and examination; (3) the spread of the cult of specialism. It is with the last error that he is here concerned, condemning, of course, only excessive, premature,

and misdirected specialism and the lack of a central controlling philosophy to hold the reins of the restive younger sciences. Mingled with countless examples of good and wise industry, his practice has brought all too frequently before him—

" . . . instances of operations unnecessarily undertaken or advised, of treatments injudiciously selected and forecasts unfairly given, not because of the inherent difficulties of medicine which tax us all, but simply because the nature and meaning of common symptoms have been insufficiently appreciated; because new machines and tests have been allowed to usurp the function of eye, or ear, or hand, or native wit; because the psychology of a patient has been misread or neglected in the previous estimates; or because he or she has never been viewed as a "whole" man or woman, and the disease never studied as a "whole" disease. All too commonly the puzzled practitioner has been persuaded into unwise diagnosis or action by a laboratory or radiological opinion unjustified because it has been given without reference to or knowledge of the general situation, which includes both organism and environment, part and whole."

What steps can be taken to restore a balanced outlook, and to promote healthy, well-directed, and correlated specialism rather than isolated pigeon-holed research by men whose initial education has lacked breadth and who are deprived by the divorce of ward from laboratory of the stimulus they most need? In seeking an answer to this main problem Prof. RYLE examines some of the recent achievements in medicine, notably those of BANTING, MINOT, LAIDLAW, and LEWIS. He finds that commonly the clinician has made himself his own experimentalist or that the collaboration between experimentalist and clinician has been so intimate that they may almost be said to have worked with one mind. In a modest reference to his own part in the investigation of spirochaetal jaundice by ADRIAN STOKES during the war he points out the close association between pathologist and clinician. "Stokes was in my ward and I was in his laboratory day by day. He saw my cases. I saw his guinea-pigs." The disease in man and the experimental animal were critically compared; observations were shared, the material and work were concentrated in one place, and results and proofs followed speedily. Such favourable opportunities for problem-sharing can hardly be provided in the hospitals of great cities as at present organised; nor has Prof. RYLE confidence that the appointment of whole-time research physicians necessarily brings in its train facilities for intimate collaboration with other scientific departments. It is thus the university with a flourishing medical faculty and a well-equipped hospital that he regards as the most hopeful soil for the culture of clinical science. Where there are already assembled anatomists, physiologists, pathologists, and biochemists, and the finest facilities for teaching and research, it is only reasonable that the circuit should in due course be completed by an active department of clinical medicine. The unit here visualised is not designed for the instruction of undergraduate students but for the provision of opportunity, guidance, and material for the training of small

¹ *The Aims and Methods of Medical Science*. By John A. Ryle, M.A., M.D., F.R.C.P., Regius Professor of Physic in the University of Cambridge; Consulting Physician to Guy's Hospital, London. Cambridge University Press, 1935. Pp. 44.

selected groups of young qualified men. No attempt is made in this inaugural lecture to enumerate the possible interests and functions of such a department, but it is indicated that the study of symptoms, their nature and their purpose, by more precise methods should be a main consideration; that intensive and continuous study of common diseases should generally be preferred to isolated research on rare ones; and that therapeutic trials might constitute a practical service. The more accurate portraiture of diseases, improvements in diagnostic and prognostic methods, and studies of innate predisposition would provide appropriate tasks, with a follow-up system as an essential element of the scheme. Incidentally the services of the department to the hospital could only be stimulating and salutary; there should be no artificial separation between its functions and those of the visiting and resident staff, whose members would in fact complete the unit.

Prof. RYLE's fine conception of clinical science, which he recapitulates, is already known to our readers.² It differs from that of Sir THOMAS LEWIS³ mainly in the relative importance attached to observational as opposed to experimental methods. We are reminded (as LEWIS indeed freely admits) that there are necessary and rather strict limits to the possibilities of experiment in sick persons; it is pertinent to refer back to the words "by every legitimate means" in the definition quoted above of the aims of medical science, for it is our pride in this country to interpret them in a most rigid sense. Moreover, as Prof. RYLE points out, the types of disease which at present lend themselves to clinical experiment are few in number; it is rarely possible to reproduce, to vary, or to measure symptoms at will. But apart from these limitations of the experimental method in the human subject, it is clearly Prof. RYLE's conviction that precise and intensive methods of observational study are not yet and will not soon be exhausted. This message commands attention. We cannot doubt that it will receive it; that he will be offered scope to develop his ideas at Cambridge as facilities become available, and that his school will do its share in making "the ward, with its associate out-patient clinic and laboratories, once more both the starting and the rallying point of many researches."

STREPTOCOCCI AND PUERPERAL INFECTION

HÆMOLYTIC streptococci are found much more often in carriers than in cases of acute infection; indeed, no other organism shows so high a disproportion between carriers and disease. This fact, and the immense variety of infections for which they are responsible, have been the chief reasons for suspecting that all cocci rightly to be described as *Streptococcus pyogenes* are not the same. Hence the evolution of an increasingly complex series of tests whereby it was hoped to classify pathogenic types, and to differentiate

from them others of less or no importance in human disease. Having qualified for serious consideration on morphological and ordinary cultural grounds, a streptococcus passes into a more select though still extremely wide category by being shown to form a soluble hæmolysin, and is then examined as to its capacity to lyse fibrin, to ferment a series of carbohydrates, to hydrolyse sodium hippurate, and to grow in the presence of bile. The wider a range of tests of this kind, the more impracticable does their routine performance become and the more confusing their results. Carried out in toto on a large series of strains, these tests have afforded useful indications; but individually their value is limited.

Serological study has met with even greater difficulties, and years of effort have gone to the definition by GRIFFITH¹ of no less than 27 types distinguishable by agglutination tests. Of the ultimate individuality of a streptococcus this method is and will probably remain the only criterion; by no other means is it possible certainly to identify the source of an infection and to trace the spread of an epidemic strain. But few workers are in a position to apply this method, and its large-scale application involves immense labour. What is needed for many purposes is some cruder test, easy of application which will clearly distinguish strains highly pathogenic for man from those which are not. This requirement is met by the precipitin test of LANCEFIELD,² which relegates hæmolytic streptococci into a small number of groups (now unfortunately showing signs of considerable extension) among which strains causing serious infections in man fall always into Group A. Results obtained by this method correspond with those of the elaborate series of biochemical tests formerly in use, and seem competent to replace those tests altogether. An opportunity is thus afforded to restudy the distribution of hæmolytic streptococci in carrier sites with much more significant results. Some useful spadework in this direction is reported in a series of papers from Queen Charlotte's Hospital, where the exclusive significance of Group A in relation to serious puerperal infections has previously been verified. A large number of strains from throat carriers has been classified by Dr. HARE,³ who finds that of streptococci from this source about a third belong to Group A; or if only those strains are included which have been shown to form soluble hæmolysin, two-thirds. Dr. HARE and Dr. MAXTED⁴ have also investigated the possibility that dangerous streptococci may be present in the faeces, a doubtful question of the utmost practical importance in seeking to explain the origin of puerperal sepsis. They found no Group A strains in the faeces of 100 normal parturient women, but recovered them from the faeces of 20 per cent. of cases of scarlet fever. It is therefore apparently possible for streptococci in the throat to reach the anus alive, although uncertain in what numbers or under what

¹ THE LANCET, 1934, ii., 1307.

² Brit. Med. Jour., 1930, i., 479. "Clinical Science, illustrated by Personal Experiences." London, 1934.

³ Griffith, F.: Jour. of Hyg., 1935, xxxiv., 512.

⁴ Lancefield, R. C.: Jour. Exper. Med., 1933, lxi., 571.

⁵ Hare, R.: Jour. Path. and Bact., November, 1935, p. 499.

⁶ Hare, R., and Maxted, W. R.: Ibid., p. 513.

conditions. It seems desirable that the faeces of a series of throat carriers should be repeatedly examined in order to get further light on this possibility. According to COLEBROOK, MAXTED, and JOHNS,⁵ no Group A strains were found on the perineal or peri-anal skin of 160 women—another piece of evidence suggesting that the bowel is an unlikely source of infection, although here again the bacteriological state of the throat was not actually known. In these studies, of course, the delicacy of the cultural technique is all-important; improved technique, if such is possible, might reveal the presence of small numbers of streptococci more frequently. In this paper it is reported, on the other hand, that Group A strains were found on the skin of the hands in 7 out of 181 normal persons (3·8 per cent.); their presence in this situation is attributed (reasonably, but without actual evidence) to contamination from the upper air-passages, and since the genital tract may thus hypothetically be infected from the throat by a route other than the alimentary canal, it is suggested that measures should be taken to disinfect the mother's hands during labour. This is perhaps an example of those more extreme precautions which do not find favour generally, and indeed may defeat their object by arousing ridicule, if only among less serious students of this difficult problem.

While bacteriologists pile up large volumes of data bearing on the aetiology of puerperal sepsis, obstetricians are still by no means of one mind on this matter, and there are many who still disregard aerial infection and deny the throat the all-important place given it in these papers as a reservoir of infection. We publish on p. 1287 an article by Dr. PHYLLIS CONGDON which offers further evidence that the source of puerperal infections is sometimes the throat of someone attendant on the patient. Her results differ from those of previous workers in the frequency with which a strain of streptococcus identical with that in the uterus was found in the throat of the patient herself; it should be pointed out that this does not necessarily mean auto-infection, since both throat and uterus may have been infected from elsewhere. Do findings such as these constitute a sufficient case for a bacteriological overhaul of all attendants, and prospective attendants, on women in labour, and the exclusion of those found to be carrying Group A streptococci? This proceeding would certainly have some very inconvenient results.

THE EXAMINER AT BAY

DURING the last century examinations of innumerable species, created by private and public bodies, have sprung up here, there, and everywhere, and have grown so luxuriantly that they overshadow not only our education but the social system of our country. Examinations form a barrier between elementary and secondary education, between secondary education and the universities; they confront the aspirant to pro-

fessional and many business careers. How far do they let through the right people? This is a question that troubles both teacher and parent, examiner as well as examinee. The latter is apt to feel that the system is one which does not do justice to his abilities; that Mr. Smith, for instance, can win approval by means of his retentive memory, whereas he, Mr. Jones, lacking that faculty, is unable to demonstrate his innate superiority in mental power. But another question, of at least equal importance, to which less attention has been paid, is this: does the fate of Smith or Jones depend to any appreciable extent upon the inevitable variability between the opinions of different examiners, or upon the variability of the same examiner at one time and another? If an examiner considers Jones worthy of first-class honours in 1935, would he place him in precisely the same category if presented with exactly the same answers in 1936? If one examiner is of opinion that Smith must be ploughed, will that opinion be endorsed by others equally competent? In fact, how far does the element of chance enter into the results of our public examinations? Into this question exhaustive inquiries are now being made. As the outcome of an International Conference on Examinations held at Eastbourne in 1931, committees were set up in England, France, Germany, Scotland, and Switzerland, their investigations being financed by grants from the Carnegie Corporation through the International Institute, Teachers College, Columbia University, New York. The English committee, which comprised distinguished professors of education and psychology, was presided over by Sir MICHAEL SADLER, and Dr. E. C. RHODES, reader in statistics at the London School of Economics, was engaged to act as their statistician. Their main work is being recorded in a volume entitled "The Marks of Examiners," now in course of printing, but the principal results of the investigations are shown in summary form in a pamphlet issued this week.¹ The position revealed, as shown by what follows, is, to say the least of it, very disquieting.

The methods of inquiry adopted appear eminently satisfactory. The scripts investigated were all actual scripts which had been written by candidates in the course of an ordinary examination—e.g., for School Certificate, a college scholarship at one of the older universities (English essay), and an honours degree (mathematics and history). The examiners by whom these papers were marked were all persons with experience of the kind of examination investigated, and they were able to mark the papers under less pressure in respect of time than ordinarily prevails at an examination, so that the marks may be regarded as expressing their deliberate opinion. Furthermore they were all paid, so that the conditions were as near reality as possible. As examples of the results reached the following may be quoted. When fourteen experienced examiners re-marked independently fifteen School Certificate history

¹ International Institute Examinations Enquiry. An Examination of Examinations by Sir Philip Hartog, K.B.E., C.I.E., and E. C. Rhodes, D.Sc. London: Macmillan and Co., Ltd. 1935. 1s.

⁵ Colebrook, L., Maxted, W. R., and Johns, A. M.: *Ibid.*, p. 321.

scripts, which had all received the same "middling" mark by the School Certificate authority concerned, they allotted no less than 43 different marks varying from 21 to 70 (out of a maximum of 96). But worse was to follow. The same papers were re-marked by the same examiners (excluding one) 12-19 months later. It is stated that they gave assurance that they had kept no record of their previous work, and, as the authors caustically add, "this was indeed obvious from the results." For on each occasion the examiners gave a verdict of Failure, Pass or Credit, and in 92 cases out of the total 210 the individual examiners gave a different verdict on the second occasion from the verdict awarded on the first! In 9 cases candidates were moved two classes up or down, while one examiner changed his verdict on 8 candidates out of 15. It seems likely that such extreme variability might be reduced by the construction of a board of examiners with an agreed and detailed marking scheme, and this plan was tested with various School Certificate papers as basis. For example, with French, two 2-hour papers were marked by two boards of examiners, the first board (A) having adopted 5 general directions and 640 detailed directions for Paper I. and 290 detailed directions for Paper II. The scheme of Board B included 700 detailed items for Paper I. and 300 for Paper II. In spite of these complex schemes the returns of the individual examiners showed that the number of Failures varied from 6 to 15, of Passes from 7 to 16, of Credits from 21 to 30, and of Distinctions from 1 to 9. Agreement was reached between the six examiners of Board A on the awards to only 27 candidates out of 50, and between the examiners of Board B in regard to only 30 out of 50. Similar results, though somewhat less discrepant, were reached with chemistry papers. With English papers seven examiners were employed. There was only 1 candidate out of the 48 to whom all seven examiners awarded the same class. One examiner ploughed 19 candidates, while two ploughed none; one gave 12 special credits and three gave none. On one paper a candidate was ploughed by six examiners and awarded a credit by the seventh. Even with a university mathematical honours paper the range of marking is considerable. With six examiners marking the same scripts the range of marks awarded, out of a maximum of 300, ranged for particular candidates from 81 to 145 and from 118 to 175—i.e., from a certain plough to a probable pass, while other candidate vary in the honours that they would have been awarded.

A particularly interesting experiment involved a viva-voce examination, of the type used in Civil Service examinations to test "alertness, intelligence, and general outlook." For this purpose two boards of examiners were set up, consisting of persons of experience, used to judging candidates by interview. Applications were invited from university students, aged 21-23, certified by the university authorities to be suitable as candidates for the junior grade of the administrative class, Home Civil Service (this is the technical name for the appointments of the highest

grade in the Home Civil Service, open to competition). To ensure an adequate stimulus a prize of £100 was offered on the results of the viva-voce examination. Sixteen candidates were thus individually examined by each of the two boards for 15-30 minutes each. After the interview each examiner recorded the mark (out of a maximum of 300) that he or she would personally award, and that having been written down the board agreed upon a mark representing the view of the whole board. The results of this very careful experiment show not only wide differences of opinion between the individual examiners but between the boards. The candidate placed first by Board X was placed thirteenth by Board Y, and the candidate placed first by Board Y was placed eleventh by Board X. The extreme differences between the two boards' estimates of the candidates' merits point, the authors are driven to conclude, to the unreliability of the interview test. Sir PHILIP HARTOG, who was present as an "impartial and silent observer" at the proceedings of the two boards, formed the opinion that while they were equally skilful in cross-examining in such a way as to reveal the weaknesses of candidates, it was largely a matter of chance whether they struck on a topic about which a candidate felt so strongly that he was able to display his individuality. The lucky recipient of the £100 (and the results of the test suggest we must stress the word *lucky*) was placed second by one board and fourth by the other.

To what conclusions does this important piece of work lead us? It is clear that the part played by chance in the verdicts given at different examinations on which careers depend must often at the present moment be a great one. No doubt the consideration of borderline cases by examination authorities does materially diminish the chances of a candidate being wrongly rejected, but it appears from this report that some candidates may be placed in error below the borderline, and thus their case is never reviewed, while others may win certificates of efficiency when they should by rights have been rejected. The employment of boards instead of individual examiners diminishes the element of chance but does not remove it. Then should examinations be abolished? The committee definitely think not. They believe that as a test of efficiency the system is necessary, but that only by careful and systematic experiments can methods of examination be devised "not liable to the distressing uncertainties of the present system. No doubt investigations like those recorded by our committee, and administrative experiments in allowing teachers, in conjunction with Government or university inspectors, to 'brand their own herrings,' would involve expenditure, but such expenditure and experiments would be justified in the public interest." The present report must give everyone engaged in the conduct of examinations furiously to think, and in the interests both of the examined and the examining it is to be hoped that the further experimental work the committee plead for will be developed.

ANNOTATIONS

A FOOD POLICY

Is not the time ripe for the initiation of a comprehensive national food policy? was the question asked by Sir Gowland Hopkins in his presidential address to the anniversary meeting, last Saturday, of the Royal Society. That underfeeding and ill-feeding exist he was sure, although he admitted the difficulty of measuring their extent, and after a diligent study of available evidence he was left with the impression that the situation called for further and immediate action. It seems that the Expert Commission on Nutrition, appointed by the League of Nations, which held its first meeting in London last week¹ under the chairmanship of Prof. Edward Mellanby, drew up a list, in order of priority, of the problems for future study at various scientific institutes, with a view to practical progress. This is the first time that nutrition has been dealt with at an international conference by European and American authorities, and the members of the conference will remain in touch with each other through the Health Organisation of the League of Nations. The League of Nations Council has appointed a joint committee for the study of the problem of nutrition, which is to present a general report to the Assembly in 1936, and the report of this week¹ will be transmitted to this joint committee, whose first meeting will take place at the end of this week. The experts who have drawn up the present report will be represented by their chairman, Prof. Edward Mellanby, and Prof. E. V. McCollum; or, if either of these is prevented from attending, by Sir John Orr or Prof. Mary S. Rose.

SMALL-POX AND ALASTRIM

THE relationship of alastrim to variola major still remains puzzling despite a very considerable body of work on the matter. The subject is not one of merely academic interest; it constitutes a major problem in public health. Although there are certain clinical differences between the two diseases, the identity of the two viruses seemed established by laboratory workers by means of animal inoculations, allergic tests, and serological investigations. The question of differentiation is, however, one of great complexity, as it concerns the antigenic structures of the two viruses. This relationship is linked with that of vaccinia. Additional data from the morphological standpoint have been provided by the studies of Dr. C. Magarinos Torres, of Rio de Janeiro, which have appeared from time to time during the last few years in the *Comptes Rendus* of the Paris Société de Biologie. These data formed the main subject of his Lloyd Roberts lecture delivered before the Royal Society of Medicine last week and briefly reported in our columns (p. 1236). Differences are stated to exist in the histological appearances of variola and alastrim, and, in especial, of the inclusion bodies within tissue cells produced by these diseases. Unfortunately the nature of such bodies, whether of the typical Guarnieri type or not, cannot be regarded as established. The commonly accepted view is that they are the products of tissue-cell reaction to the influence of infection by the virus. In the opinion, however, of E. W. Goodpasture and his co-workers,² studying the lesions on the chorio-allantoic membranes of chick embryos produced

by vaccinia of neurotesticular origin, there was evidence that the Guarnieri bodies represent, in part at least, colonies or masses of elementary (Paschen) bodies. It is prudent therefore to suspend judgment on the significance of Dr. Torres's observations. The pathological findings in alastrim are valuable and the lecture should stimulate research into the histology of this disease, and particularly research into the nature of the inclusion bodies associated with the tissue changes in all three linked viruses.

BLINDNESS IN THE U.S.A.

It is not easy to make a statistical survey of the causes of blindness in any country, and Mr. Harry Best shows us in his book¹ that the difficulties in America are exceptional. The survey, to be of practical service, must include those with considerably more vision than bare perception of light, and it is by no means easy to draw the line between the blind and the partially blind. Moreover, in America, each State has its own regulations concerning blindness, and naturally these differ. The attempt to compile elaborate and detailed statistics applicable to the United States as a whole would therefore appear to be futile. The proportions of blindness due to different causes can only be stated roughly, but taking the main categories they appear to be approximately the same in America as in England. For example, blindness from ophthalmia neonatorum is diminishing owing to greater care in prophylaxis. The incidence of trachoma is now small except among the Indians. At early ages congenital cases form a considerable proportion of the blind; in middle life accidents loom large, and in later life the main causes of new cases are cataract and glaucoma. In this connexion it would be interesting if it were possible to trace the effect of improved operative treatment on the statistics of blindness, but as far as we know this has not been attempted.

Taking the United States as a whole, about half of the total blind population are supported either by their own private means or by their families, relatives, and friends. The total amount of relief from almsgiving or organised charity is not assessed. A few of the blind are cared for in special homes, and the most frequent form of public relief is maintenance in almshouses, where about 6 per cent. of the total number of blind are provided for. In some States pensions for the blind exist under the direction of the several counties with more or less of State supervision.

The problem is still in the experimental stage, being in the hands, not of the Federal Government, but in those of the various States. On the whole public economic assistance to the blind in the United States appears to be less systematised than in England where progress in this matter has been steady since the passing of the Blind Persons Act in 1920. Schools for the blind were opened about a hundred years ago in Boston, New York, and Philadelphia, and other States gradually followed. Their origin was due to private initiative, but it was not long before Government grants were obtained. Since 1920 State schools for the blind exist in most States, and it is estimated that three-quarters of the blind population between the ages of 5 and 24 are

¹ THE LANCET, Nov. 30th, p. 1270.
² *Proc. Roy. Soc. Med.*, B. 28, p. 1, 1935, and *Buddingh, G. J.*: *Proc. Roy. Soc. Med.*, B. 28, p. 1, 1935, and *Buddingh, G. J.*: *Proc. Roy. Soc. Med.*, B. 28, p. 1, 1935.

¹ *Blindness and the Blind in the United States*. By Harry Best. New York: The Macmillan Company; London: Macmillan and Co., Ltd. 1935. Pp. 714. 2ss.

educated in these. In the large cities a few ordinary day schools have special classes for the blind but, on the whole, owing to the absence of any compulsion, in many States the education received is, according to Mr. Best, not very satisfactory. Until comparatively recently various systems of raised type were employed, but in 1916 a satisfactory system of Braille was adopted by the American Association of Instructors for the Blind and is now general. Besides oral instruction and the acquirement of Braille reading, physical training is especially important. Musical instruction always occupies a prominent place in the work of the schools, and a number of piano tuners are turned out. Industrial training includes sewing, knitting, chair-caning, brush- and rug-making, basketry, carpentry, and cooking. An interesting section deals with the blind workshop movement, and there are others dealing with indemnities paid for loss of sight through suits at law, through insurance, and through Workmen's Compensation laws.

BIOPSY OF STERNAL MARROW

It is said that Türk, when questioned about the pathology of a certain "blood" disease, haughtily replied: "Sir, I am a peripheral hæmatologist." To-day few people are rash enough to make a diagnosis in obscure cases without some knowledge of the character of the hæmopoietic tissue; and recent observations show that such knowledge may well be gained during life by the method of sternal marrow puncture. Dameshek¹ and also Young and Osgood² have lately reviewed large series of cases studied in this way. Dameshek obtained his marrow by means of a special small trephine enabling him to prepare both smears and sections, while Young and Osgood removed through a lumbar puncture needle enough marrow to make smears. The results of the two methods seem to agree closely. Many conditions presenting anemia as an outstanding symptom fail to provide signs, either clinical or hæmatological, that allow of an exact diagnosis. This is particularly true of aleukæmic myelosis. Thus, if a large spleen is found in patients with anemia and leucopenia, splenic anemia is usually diagnosed. If the anemia is megalocytic, pernicious anemia is accepted as a diagnosis; if petechiæ and hæmorrhages are present, thrombopenic purpura is considered; and if there is a conspicuous leucopenia with few neutrophils, agranulocytosis is suggested. In such cases of obscure anemia associated with leucopenia and thrombocytopenia, bone-marrow biopsy frequently shows that the marrow may be extremely cellular, though the peripheral blood itself is almost devoid of white cells. "Agranulocytosis," which fails to respond to pentose nucleotide, is often, probably, aleukæmic leukæmia; many cases of "pernicious anemia" which do not improve on liver fall into the same group; while Dameshek found that the great majority of a series of cases diagnosed as Banti's disease should on biopsy examination be grouped as aleukæmic leukæmia. Apart from its value as a diagnostic aid, the examination of marrow smears should give us information useful on a more academic plane. For example, Osgood and Young were able to demonstrate numerous stippled red cells in a case of lead-poisoning, whereas Aub and his associates had previously claimed that stippling is not seen in marrow cells, and is therefore, at least in lead-

poisoning, a sign of degeneration. It is clear that biopsy studies of sternal marrow, if undertaken by observers with considerable experience of the appearance of normal marrow, will be a valuable addition to the more usual technique of "peripheral hæmatology."

RENAL, CORTICAL NECROSIS IN PREGNANCY

Diffuse and almost complete symmetrical necrosis of the renal cortex is fortunately rare among the complications of pregnancy. Few pathologists have seen more than two or three examples, and its pathogenesis is still obscure. Dr. S. De Navasquez's histological study¹ of a series of 15 cases—3 from Guy's Hospital and the remaining 12 collected from other sources—has given him an opportunity of detecting and bringing into prominence what appears to be the essential histological lesion. His analysis shows no evidence of a pre-existing nephritis. The changes, which closely resemble those of anæmic infarction, must be referred to a vascular mechanism; and here it is of importance that De Navasquez discards the theory of local thrombosis both from the structure of the vessel contents—which, he says, are no more than conglutinated red and white corpuscles without fibrin or platelet deposition—and from the study of two early cases in which these so-called thrombi were absent. On the other hand, he finds that a variable degree of necrosis of the intralobular arteries and their branches can be detected and regards this as the primary change in these kidneys. Comparison shows that it is distinct from the necrosis that inevitably takes place in the walls of vessels included in areas of true renal infarction. It is of interest that De Navasquez finds identical histological changes in the specimens from a case of dioxane poisoning supplied by Dr. H. Barber. This is perhaps the only agent of known chemical composition that has as yet been shown to produce bilateral diffuse cortical necrosis of the kidneys; it is certainly not known how such necrosis is produced in pregnancy. De Navasquez states, however, that it has been caused experimentally in rabbits by means of bacterial toxins and that we may expect a future communication upon the results of this work.

URINARY INFECTIONS OF THE NEW-BORN

In the first week of life it is not uncommon to find a baby feverish and passing very little urine. The condition will often respond quickly to extra fluid by mouth or (if there is already anuria) intravenously. How many of these cases represent a primary disorder of the urinary apparatus and how many the so-called "dehydration fever" it is hard to say. Dr. W. S. Craig² does not mention the latter possibility; but his general study of urinary infection in the new-born is one which deserves attention. First he determined normal standards by examining 200 specimens of ordinary urine from healthy non-febrile infants between the ages of twelve hours and fourteen days. In 163 of these no cellular or other solid elements could be discovered; in the remaining 37 epithelial cells were the commonest finding, and in 10 there were polymorphonuclear leucocytes, never in greater number than one in 10-15 high-power fields. Of 43 catheter specimens examined bacteriologically, 7 gave isolated discrete colonies of *Bacillus coli* on culture, and 3 gave sparse growths of other organisms. In contrast to these normal findings Craig gives the results of examination of the urine

¹ Dameshek, W.: Amer. Jour. Med. Sci., November, 1935, p. 617.

² Young, R. H., and Osgood, E. E.: Arch. Internal Med., 1935, lv., 186.

¹ Jour. Path. and Bact., November, 1935, p. 385.

² Arch. Dis. Childhood, October, 1935, p. 377.

of 61 infants considered on clinical grounds to have some disorder of the urinary tract. Numerous pus cells were present in 48 cases (5-140 per field) and organisms were sometimes found in those without pus cells; the urine contained casts in 14 cases and there were 7 with a mixed infection. That briefly summarises the pathological findings. Clinically the chief features—roughly in order of frequency—were fever, anuria, or a big decrease in urinary output, thirst, restlessness and irritability, changes in colour to a dusky-grey, sweating, vomiting, oedema, collapse, and terminal convulsions—the last occurring in 10 per cent. of cases. Of the 61 children, 9 died never having left hospital, but recovery was apparently complete in all the others. More males were affected than females—40 as against 21—which is in contrast with the findings in later life. Without offering any final solution of the problem Craig thinks that the symptoms at any rate are closely related to the excretory activity of the kidneys, and that the paucity and high concentration of the urine ordinarily passed in the early days of life may make infection easier. Treatment is directed towards promoting free diuresis. Provided there was no collapse and the general condition of the child remained good, feeding was allowed to proceed normally. Extra fluids in the form of water or weak tea were given between feeds; in the presence of collapse or high fever they were given at hourly or half-hourly intervals, and milk was temporarily excluded. Alkalis were administered as sodium or potassium citrate with an initial dose of 16-20 grains in twenty-four hours. This was usually enough to make the urine alkaline, but larger doses were sometimes needed; subsequently the dose was adjusted to maintain alkalinity. The bowel function was treated by an initial dose of castor oil (30 minims) and bowel lavage if the motions were fetid; and local warmth was applied to the lumbar region. Among the babies whose career was followed after discharge many were found to pass *B. coli* and pus for several weeks after all symptoms had disappeared.

STANDARDISATION AND ESTIMATION OF VITAMIN A

THE success of the International Conference on Vitamin Standardisation, held in London last year, was largely secured by careful preparation in this and other countries. This preparation involved much experimental work of the sort in which parallel tests are made in several laboratories with the same material. Such investigations have to be coördinated, and this was done in Great Britain by a subcommittee for each vitamin, appointed by the Accessory Food Factors Committee, which is itself appointed jointly by the Medical Research Council and the Lister Institute. Corporate studies of this kind are very difficult to publish. The contribution of a single worker or laboratory is often quite inadequate when described by itself, or at any rate loses much weight by standing alone. On the other hand, if all the contributions are collected and published together, the attempt to harmonise them may be almost hopeless. In the latest special report of the Medical Research Council¹ such an attempt has been made for the experimental work done by British workers in connexion with the international standard for vitamin A. Studies from different laboratories are collected, and it has proved possible to weld them

into a reasonably coherent form. They included a search for a suitable solvent for the crystalline carotene, acting as the international standard. This solvent had to be one in which the carotene remained stable and from which it was well utilised by the experimental animals. Coconut oil with added hydroquinone was selected. Then it was necessary to ascertain the biological value of pure β -carotene, which was recommended as international standard to replace the impure mixture of carotenes which was provisionally adopted as standard by the first conference in 1931. This was a very important value which could be ascertained only by a biological test. The error in such biological estimations is great and there was corresponding advantage in having a value based on the results from several laboratories. In some substances, such as cod-liver oil, there is no carotene, the only source of vitamin-A potency being the vitamin itself. A spectroscopic method of estimating vitamin A in such material had come into use and the report includes joint studies on the reliability of this test and on the factor which should be used for converting the results of the spectroscopic test into international units of vitamin-A potency, as determined by the biological test. A figure for this factor was fixed, and adopted by the conference—perhaps rather prematurely. The report also contains studies on cod-liver oil as a subsidiary international standard for vitamin A, in addition to β -carotene. This section includes some interesting comparative figures in which biological tests for vitamin A were made on the same material not only in this country but also in American and several European countries, and good agreement was achieved. Finally it reproduces in full the report of the International Conference on Vitamin Standardisation, which is not very easily accessible otherwise. It is gratifying that the recommendations arising from the corporate studies reported in this book were embodied in the decisions of the conference.

HEDGEHOGS AND THE COMMON COLD

THE search continues for an experimental animal susceptible to the common cold. Human volunteers and chimpanzees, while definitely susceptible, cannot be used to solve most of the major problems of the disease. Interest attaches, therefore, to a preliminary communication made by Mr. J. T. Edwards, D.Sc., to the meeting of the section of comparative medicine of the Royal Society of Medicine held at the Lister Institute on Nov. 27th. Observations on foot-and-mouth disease formed the starting-point of his studies; the virus of this disease will infect hedgehogs by the intranasal route and causes in them a high mortality. As the virus is passed in series, the rôle of secondary invaders, such as *pasteurella*, *salmonella*, and particularly *Bacillus bronchisepticus*, becomes more prominent. The virus, in fact, activates the normal nasal flora of the hedgehog and this may lead to the animal's death from bronchopneumonia or septicæmia. "It was possible," argues Edwards, "that if material derived from cases of common cold contained a filtrable virus, this virus might in a similar way be found to prepare a way for certain subpathogenic bacteria on the nasal mucosa of the hedgehog to obtain a foothold, multiply, and set up catarrhal lesions." Filtered and unfiltered secretions from three cases of acute coryza in man were inoculated into hedgehogs under ether anaesthesia, and Edwards reports that a number of animals showed an increase in their nasal discharge after inoculation, and that in some of them catarrhal

¹ Reports on Biological Standards. IV. The Standardisation and Estimation of Vitamin A. Edited by E. M. Hume and H. Chick. Med. Research Council, Spec. Rep. Ser. No. 202. London: H.M. Stationery Office. 1935. Pp. 61. 1s.

lesions were found histologically in the mucosa covering their turbinates. *B. bronchisepticus* was the organism most commonly recovered from affected hedgehogs. Broth and "heated cold filtrate" did not produce comparable effects. Passage in hedgehogs was apparently successful for three serial transfers.

At the same meeting Dr. C. H. Stuart-Harris said that in consultation with Dr. Edwards he had been carrying out similar experiments at the National Institute for Medical Research at Hampstead. He was able to confirm the fact that hedgehogs inoculated intranasally with common-cold secretions develop an increased nasal discharge. He hesitated, however, to conclude at this stage that the effect was a specific one, for three reasons. First, normal hedgehogs show great variation in the amount of their nasal secretions; secondly, he had suggestive evidence that inoculation of *B. bronchisepticus* alone could increase the amount of secretion; and, thirdly, he had been unable to correlate the amount of discharge with the histological findings.

This line of approach to the common cold is an interesting one, but the interpretation of the results must be much more difficult than in most work on viruses, for variation in the nasal flora of hedgehogs is a factor very difficult to control. The results must therefore be regarded with great caution, indicating at most that further work along these lines is desirable. It may be added that as Edwards has failed to infect ferrets and mice, the virus, if virus there is, is probably distinct from that of influenza.

FEVER HOSPITALS, PAST AND FUTURE

IN his presidential address to the fever group of the Society of Medical Officers of Health on Nov. 29th, Dr. E. H. R. Harries made good his claim that the modern fever hospital would, in relation to its special purposes, bear comparison with institutions more widely known, even if the attempt to reduce the incidence of endemic infectious disease by the isolation of a minority of infected individuals had failed. The great decline in the enteric group was admittedly due entirely to sanitation; there had been no appreciable reduction in the incidence of scarlet fever, diphtheria, measles, or whooping-cough, and the fall in the mortality of the common specific infections began before the provision of fever hospitals became general. The reduction in mortality of diphtheria Dr. Harries attributed primarily to the introduction of antitoxin, combined with sound nursing; it had now probably reached its limit. Some may not agree with him that the decline in fatality commenced steeply 40 years ago—for during the last decade of the nineteenth century diphtheria mortality was higher than in the preceding two or subsequent three decades—but none will dispute that without skilled nursing, which ordinarily can only be obtained in hospital, antitoxin may be of little avail. Dr. Harries here lends his weight to the belief, now becoming general, that overcrowding in wards is not economical; on the contrary, it results in a high incidence of cross-infections and in a lengthened average stay. The bed spacing which is now the rule would even thirty years ago have seemed fantastically extravagant or divinely fortuitous. All experienced hospital administrators are at one in regarding the ward management of several of the common fevers as essentially the control of infection and reinfection of the upper respiratory tract. To this end not only is adequate bed-spacing in the open ward essential, but also the segregation

of patients who constitute potential foci of gross infection. To the pioneers of a generation ago we owe the introduction of aseptic nursing, the cubicle, the chamber, the barrier, and the bed-isolation ward.

Dr. Harries had much to say for the status of the fever hospital as a training and teaching institution. The provision of specialist services, he feels, is not only necessary in the interests of the patient but wholly desirable from the point of view of the institution and the staff. The instruction in fevers included in the medical curriculum is at present quite inadequate; the work of the fever hospital requires the closest integration with that of the children's hospital and the general hospital. The time has arrived for team-work rather than individual effort. Opportunities for clinical study of many of the fevers are strictly limited in this country. Those who have had any extended clinical experience of for instance typhus and relapsing fever (and he might have added small-pox) are now few and the clinical aspect of the enteric group of infections has changed for the better. But there is still much to be learned in the wards of the fever hospital, and opportunities are not lacking for original investigation—something more than, in his caustic phrase, papers that parade the apparatus and protocols of a scientific paper. Dr. Harries would have every assistant medical officer attempt some piece of clinical investigation; and this he can do only by knowing the literature of his special subject and, where the subject lends itself to statistical control, by seeking the advice of those who can foresee possible fallacies. In the proper care of the ear during the acute specific infections Dr. Harries finds the chief prophylactic measure against deafness and deaf-mutism; it would be difficult to assess the value of otologists in fever hospitals either in terms of hearing saved or of stay diminished. The solution of the larger problem of preventing the running ear would ultimately be brought about not by the otologist alone but by his collaboration with medical administrator and clinical officer. In measles the day was not far distant when every case before discharge would be X rayed to detect signs of grave pulmonary sequelae.

COLLAPSE THERAPY IN PLEUROPNEUMONIA

THE suggestion that therapeutic pneumothorax may be of benefit in pneumonia is not new, for Friedemann treated seven cases by this method in 1921 and was able to report that each had made an uneventful recovery. Experimental support for the method was, however, not forthcoming till Lieberman and Leopold demonstrated its value in the treatment of eighteen dogs suffering from unilateral pneumonia, and compared the result with the fate of a similar number of untreated animals. Before 1934 some fifty cases, with only three deaths, had been reported of the use of the same method in human beings. Already in 1932 Dr. J. J. Coghlan related in our own columns¹ a series of cases of lobar pneumonia treated at St. Olave's Hospital, Rotherhithe, by artificial pneumothorax. The induction gave rise to something very like a normal crisis, but he found that control of the pneumonic process itself was temporary. In our present issue Dr. W. E. Robertson publishes the results obtained in a series of forty-seven cases treated at the Philadelphia General Hospital; the patients included twenty negroes and the death-rate was 43 per cent. The result would not be impressive

¹ THE LANCET, 1932, I., 13, and 1934, I., 1127.

apart from Dr. Robertson's explanation that this hospital serves the needs of the poorest, among whom ignorance, neglect, and economic stress are perennial. More favourable results are reported by Blake, Howard, and Hull² who claim four successes in four cases treated within 24 hours of the onset of the disease, and six successes out of nine cases in which treatment was begun between 24 hours and 48 hours after onset. In the three cases apparently uninfluenced by the treatment pleural adhesions were present. It should be remembered, however, that the patient who receives pneumothorax treatment at an early stage is one who has been promptly admitted to hospital. A patient who travels to hospital after the second day of his illness makes a hazardous journey and his chances have often been prejudiced by inadequate nursing before arrival. Those who have employed collapse therapy in pneumonia are agreed that its use in early stages, when pleural pain may amount to agony, brings immediate relief to the patient. A similar relief is experienced when a pleural effusion separates the parietal and visceral pleura in tuberculous inflammations. Even if the treatment effected no more than this much would have been gained. Acute pain and shallow hurried respirations at the onset of pneumonia must lower resistance and prejudice the sufferer's chance of recovery. The immediate relief of pain and respiratory distress may bring the much needed sleep and enable the physician to dispense with hypnotics. T. Klein and V. L. Tuck, also from experience at the Philadelphia General Hospital, claim³ that alleviation of pain is invariably followed by a diminution of cyanosis and a slowing of respiratory and pulse-rates. And in our present issue Dr. Cedric Shaw gives striking examples of the relief afforded to pleuritic pain by even a shallow pneumothorax.

When pneumothorax treatment has been adopted the method generally employed has been to inject sufficient air to produce a modest degree of collapse and to maintain this only for a short period, e.g., 300-500 c.cm. at induction followed by a refill some 24 hours later. It has now been suggested² that a complete collapse of the diseased lung, or at any rate a complete selective collapse, is necessary to get full benefit from the treatment. This requires X ray control and is only applicable if bedside radiography is available. To obtain adequate collapse without frequent refills and without causing dyspnoea a large initial amount is given, the air being introduced very slowly. In this way as much as 2000 c.cm. of air have been given at induction. As the air flow should not exceed 12 c.cm. or so per minute a period of between two and three hours may be required to raise the intrapleural pressure to atmospheric level. The first refill will be required within eight hours, the time selected for the refill and the number of subsequent refills depending on the pressure level at the end of the first treatment, on the volume of air already introduced, and on the clinical response. For work of this kind a free pleura is, of course, essential and it is difficult to think that the treatment is without risk. There is however reason to believe that as a palliative measure artificial pneumothorax is of definite value in the treatment of pneumonia with pleurisy. That it has curative value is open to question; the successes hitherto claimed may be of the kind commonly noted when a new remedy is introduced. Whether the period of sickness can thus be shortened and the chances of death diminished will only be determined after statistically significant

results have been reported and compared with properly selected controls. Meanwhile in preparing a scheme for the treatment of pneumonia the prudent doctor might well add artificial pneumothorax to the list of permitted remedies, with the proviso that it should only be adopted if pleural pain and respiratory distress aggravate incipient disease.

On Thursday, Dec. 12th, Dr. Cecil Wall will give the Thomas Vicary lecture to the Royal College of Surgeons of England. He will speak on the Surgeons' Company, 1745-1800.

On Nov. 26th the gold medal of the Birmingham Civic Society was presented to Sir Gilbert Barling in recognition of his services to the intellectual and aesthetic life of the city. Sir Gilbert was for twenty years pro-chancellor of the university and has been for ten years chairman of the society.

THE MEDICAL DIRECTORY for 1936 reaches us on Nov. 29th, 1935, and is as convenient and accurate as usual—perhaps a little more accurate, for during the year the Editor of the Directory notified through our columns those members of the medical profession who had not communicated to him their present address, and we were happy to collaborate inasmuch as the accuracy of the Directory is a matter of public importance. The blemishes are likely therefore this year to be more difficult than ever to find. Fortunately the Directory was warned of the general election in time to delete the list of medical Members of Parliament which would otherwise have been somewhat out of date. The numerical summary of the medical profession shows the total names in the 1936 Directory—namely, 58,094—to be an increase of 966 over last year, the increment being far the largest for nine years past. Of this increment, London is responsible for 222, the Provinces for 533, Wales for 32, Scotland for 62, Abroad for 127, and the Services for 3; while Ireland has decreased its entry by 13. We congratulate the Directory on its team-work.

A FUND FOR DENTAL AID

THE IVORY CROSS National Dental Aid Fund was established in November, 1914, by the late Miss Fletcher to provide dental aid for soldiers and sailors. To fit them for active service, and for recruits with dental defects which prevented their acceptance. It was not until November, 1915, that the War Office provided for Imperial Service men; nor did the Admiralty undertake the treatment of sailors or recruits for the Navy until January, 1916. Since the war the charity has been actively engaged in the provision of dental treatment for members of the civil population who are unable to meet the cost of such services. The work has grown to such an extent that it was thought desirable to reorganise the administration on a wider basis, and this has now been done. The council includes representatives of many other interested charities and a committee representative of the dental profession is being formed for advisory purposes. Grants in aid of dental treatment are made on the recommendation of a case committee after examination of the claims received from numerous applicants. Although the Ivory Cross is run as far as possible on a contributory basis, it is necessary to make grants to many who are unable to contribute anything, and the strain on the funds is consequently heavy. It is rightly stated that the work which the charity could carry out, had it adequate funds, is enormous. The address is 67, Wadbeck-street, London, W.1, and all communications, including applications for assistance, should be addressed to the secretary.

¹ Jour. Amer. Med. Assoc., 1935, cv., 1489.

² Amer. Rev. Tuberc., 1935, xxxii., 311.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXX.

PROGNOSIS OF PITUITARY TUMOURS

I*

THREE varieties of tumour are found in the anterior lobe of the pituitary gland: chromophobe adenoma, acidophil adenoma, and basophil adenoma.¹ The basophil adenoma has recently been considered by Cushing as the cause of certain endocrinal symptoms, but the information so far accumulated is not sufficient to justify prognosis. In acidophil² and chromophobe adenomas, on the other hand, the course of the illness can be predicted within certain limits. Both types of tumour produce disturbances of bodily appearance and of the other endocrine glands of the body, and, as they enlarge, both tend to project upwards and press upon the optic chiasm.

Acidophil adenoma is the type of tumour that gives rise to acromegaly. This condition is recognised at a glance by the characteristic changes of external appearance. The diagnosis is easy and the symptoms manifold, and it is not surprising therefore that in acromegaly the prognosis has to cover a wide field. In *chromophobe adenoma*, on the other hand, the question of prognosis arises in a different way. The changes in external appearance produced by this tumour are far from obvious and do not distress or incommode the patient; the diagnosis is practically never made until the onset of visual symptoms and recognition of the fact that these symptoms are due to involvement of the optic chiasm. In these cases, and they are much more common than cases of acromegaly, prognosis will largely centre upon what is likely to happen to the patients' eyesight.

Methods of Treatment

Before considering to what extent these maladies can yield to treatment, it is advisable to survey the therapeutic methods so far available. Because of certain difficulties and dangers surgical attack upon a pituitary adenoma is usually limited to partial removal of the tumour, with the object of relieving pressure upon the optic chiasm. Of the other methods, irradiation by the modern high voltage X ray plant in the hands of experts has proved very useful in some cases of acromegaly, and so, to a lesser extent, has the implantation of radium or radon into the sella turcica by open operation. There is so far no evidence that irradiation is of much value in chromophobe adenoma. These are the only methods of radical treatment at our disposal. Dietetic treatment is of importance in certain phases of pituitary disease, and insulin is helpful in many cases of acromegalic diabetes, but other varieties of hormone treatment, of which many have been tried, have not yet proved successful.

Acromegaly

Acromegaly is compatible with a long and useful life. This is well illustrated by the case of Dr. Leonard Mark, who practised medicine in London with considerable distinction notwithstanding that

he was for many years afflicted with a severe degree of acromegaly, described in his book (*"Acromegaly: a Personal Experience,"* London, 1912).

What are the prospects of one who, from coarsening of his features, increased prominence of his mandible and enlargement of his extremities, is recognisable to all beholders as a sufferer from acromegaly? There is nothing so far known that can bring back his normal appearance and it is well, therefore, that he is usually not disturbed by the disfigurement, so gradual is its progress. If the disease begins before the epiphyses are united the patient will grow to gigantic proportions, and the younger he is the more intense the change. But the changes of acromegaly and acromegalic gigantism do not progress indefinitely; usually they cease after a few years, though the lower jaw may slowly project a little more, with increasing disturbance of the bite. Acromegalic patients seem particularly subject to dental caries and need constant attention to their teeth and to their bite. X ray treatment is probably of considerable value in limiting these disturbances and in diminishing the thickening of the subcutaneous tissues that is characteristic of the disease.

There are many patients with pituitary adenoma in whom slight alterations of an acromegalic type can only be found on close scrutiny, and these changes do not progress. They are cases of fugitive acromegaly² (Bailey and Cushing, *Amer. Jour. Path.*, 1928, iv., 545) and the adenomas that produce them are usually composed not solely of acidophil cells but of a mixture of acidophil and chromophobe cells. In these cases a cheerful forecast about the change of features can be given if the question arises.

Sexual Dysfunction

Both in acromegalic and in chromophobe adenoma sexual functions tend to be greatly depressed or absolutely lost. Evidence is accumulating to show that this is due to pressure of the tumour upon the basophil cells of the anterior lobe, and W. R. Henderson (*Endocrinology*, 1931, xv., 111) has shown that it is least likely to occur when the sella is small, the tumour being either entirely suprasellar, or, if intrasellar, quite small.

Of females of the child-bearing period, over 70 per cent. sooner or later cease to menstruate, while others have scanty and irregular periods. Menstrual activity is affected less frequently in acidophil than in chromophobe adenoma. In Henderson's series 16 out of 66 acromegalic women of the child-bearing period continued to menstruate regularly for some time after their acromegaly had become obvious; in a few of them one or even two normal pregnancies occurred. In chromophobe adenoma amenorrhœa is almost invariably the first recognisable symptom of the disease and subsequent child-bearing is the greatest rarity.

After operation, or less commonly after intensive X ray treatment to the pituitary gland, the normal menses will sometimes return and normal pregnancies have occurred. In one of my cases a healthy child was born, although the mother had never menstruated after her tumour was removed eighteen months before the confinement (D. M. Stern, *Proc.*

* The prognosis of visual loss will be dealt with in a second article.

¹ No attempt is made here to consider epidermoid tumours (tumours of Rathke's pouch) or other tumours arising near the pituitary gland.

² O. Hirsch (Wiener klin. Woch., 1931, xlv., 932) has called this *benign acromegaly* to distinguish it from outspoken malignant acromegaly.

Roy. Soc. Med., 1934, xxvii. (Sect. Obst. and Gyn.), 79-80). In males sexual disturbance occurs perhaps less frequently than in females, but in practically all subjects with a large tumour there is partial or complete loss of potency and of sexual desire. Sexual function often improves after operation, but it is not possible at present to predict those cases in which improvement will occur.

Disturbance of Carbohydrate Metabolism

Patients with pituitary adenomas are subject to disturbance of carbohydrate metabolism. In chromophobe adenoma sugar tolerance is usually raised and the patient becomes fat. The obesity is rarely of such a degree as to require dieting, but when it is dietetic treatment is usually effective. With few exceptions acromegalics have a lowered sugar tolerance and diabetes occurs sooner or later in 25 per cent. of them. I have also seen it in a case of suprasellar cystic chromophobe adenoma. (Diabetes is also very common in association with basophil adenoma.) It may come on years after the onset of acromegaly, even after the visual symptoms of the disease have been successfully dealt with by operation, and it is never safe to predict that an acromegalic will not develop diabetes. In this connexion it may be said, however, that it is more likely to occur in patients with a family history of diabetes. Its onset appears to bear no relation to the size of the tumour, and it is of variable intensity. As a rule it responds fairly well to dieting and insulin, and is more easily controlled in this way after partial removal of the tumour than before. A few cases have been reported in which diabetes temporarily disappeared after removal of the tumour. All acromegalics should have expert guidance about their diet.

Headache and Other Subjective Discomforts

In acromegaly severe headache behind the eyes is likely to occur as the malady advances. The walls of the bony sella take part in the generalised bony thickening that is a characteristic of the disease and doubtless offer great resistance to increase in bulk of the tumour they enclose. It is not surprising that lachrymation, sometimes intense, usually accompanies the headache, probably produced by expansion of the tumour laterally and by partial obstruction of the cavernous sinuses. Sudden cessation of headaches suggests that the tumour has broken through the diaphragma sellæ and is extending upwards. Pain in the face, often unilateral and perhaps even simulating trigeminal neuralgia, may also occur. These symptoms can be partially relieved by irradiation of the pituitary region, and also by transphenoidal decompression of the sella. It may be that this operation should sometimes be undertaken for the relief of headache alone.

Acromegalics suffer also from discomfort in their hands and feet. Enlargement of the tongue may make speech difficult and may offer partial obstruction to breathing during sleep. Nasal catarrh also is common in advanced cases and most acromegalics suffer at some time or other from periods of great bodily weakness. These symptoms are not necessarily incapacitating and they are often improved by operation. Usually the discomforts lessen as the years pass.

Patients with chromophobe adenoma do not suffer from intense headache, doubtless for the reason that in them the bony sella is not thickened and expands or gives way as the tumour increases in size. But

they often have, as do acromegalics, periods of drowsiness when they feel an intense desire to give way to sleep in the day-time

HUGH CAIRNS, M.B. Adelaide, F.R.C.S. Eng.,
Surgeon to the Neurosurgical Department,
London Hospital.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. K. A. I. Mackenzie to *Victory* for R.N.B.; S. G. Rainsford to *President* for R.N. College, Greenwich; and A. G. Bee to *Drake* for R.N.B.

Surg. Lt.-Comdrs. L. J. Corbett to *Galatea*; and J. G. Holmes to *Pembroke* for R.N.B.

Surg. Lts. G. D. Wedd to *St. Vincent* and to *Amphion* on commg. for trials; and S. J. Wheeler to *Tamar* for R.N. Hospl., Hong-Kong.

ARMY MEDICAL SERVICES

The King has approved the following appointments:—

Major-Gen. T. S. Coates, O.B.E., late R.A.M.C., Col. J. Heatly-Spencer, O.B.E., late R.A.M.C., and Lieut.-Col. R. N. Chopra, C.I.E., I.M.S., to be Honorary Physicians to the King, in succession to Major-Gen. R. B. Ainsworth, C.B., D.S.O., O.B.E., and Major-Gen. P. H. Henderson, C.B., D.S.O., late R.A.M.C., and Major-Gen. Sir Robert McCarrison, C.I.E., I.M.S., who have retired.

Major-Gen. O. Ievers, D.S.O., late R.A.M.C., Col. E. W. C. Bradfield, C.I.E., O.B.E., Honorary Surgeon to the Viceroy of India, and Lieut.-Col. A. A. C. McNeill, I.M.S., to be Honorary Surgeons to the King, in succession to Major-Gen. J. F. Martin, C.B., C.M.G., C.B.E., late R.A.M.C., and Major-Gen. H. R. Nutt, late I.M.S., and Col. H. E. Stanger-Leathes, late I.M.S., who have retired.

Lieut.-Col. R. N. Chopra and Lieut.-Col. A. A. C. McNeill are promoted to the rank of Brevet Colonel on their appointment as Honorary Physician to the King and Honorary Surgeon to the King, respectively.

ROYAL ARMY MEDICAL CORPS

Short Service Commissions: Lts. (on prob.) restd. to the estab.: A. M. Pugh, J. H. Taylor, and G. C. Dansey-Browning.

A. R. O. Denton to be Lt. (on prob.).

Lt. (on prob.) G. G. Robertson resigns his commn.

REGULAR ARMY RESERVE OF OFFICERS

Lt.-Cols. C. T. Edmunds, D.S.O., and J. A. Anderson, and Majs. G. H. Stack and E. G. Antonisz, having attained the age limit of liability to recall, cease to belong to the Res. of Off.

ROYAL AIR FORCE

Wing Comdrs. P. T. Rutherford, O.B.E., to No. 1 Flying Training School, Leuchars, for duty as Medical Officer; and T. J. Thomas to No. 6 Flying Training School, Netheravon, for duty as Medical Officer.

INDIAN MEDICAL SERVICE

Majs. to be Lt.-Cols.: R. A. Logan and F. M. Kirwan. Maj.-Gen. T. G. F. Paterson, C.B., D.S.O., K.H.P., retires.

Indian Medical Department.—Capts. (Sen. Asst. Surgs.) to be Majs. (Sen. Asst. Surgs.): L. P. Gernon and R. H. Hughes.

DEATHS IN THE SERVICES

The death occurred at Cheltenham on Nov. 27th of Lieut.-Colonel WILLIAM KEITH HATCH, I.M.S., retired, who was born in 1854. He qualified M.B., C.M. Aberd., and M.R.C.S. Eng. in 1876, becoming a Fellow in 1887. After residence at a provincial hospital he went to India in November, 1877, as "Surgeon, Bombay Army." He became surgeon to the Jamsetji Jijibhoy Hospital and first professor of anatomy, then professor of surgery at the Grant Medical College. In 1897, when principal of the college, he reached the rank of Lieut.-Colonel, retiring six years later. Colonel Hatch held the Afghanistan medal 1880, which was issued in that campaign instead of the Indian medal.

SPECIAL ARTICLES

THE PHENOMENON OF TWORT-
d'HÉRELLE AND ITS SIGNIFICANCE

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It is just 20 years since Twort wrote the first description¹ of transmissible bacterial lysis. His work, however, published in the middle of the war passed unnoticed, and it was left for d'Hérelle² to draw the attention of inquirers to a remarkable phenomenon which has never ceased to enthrall them. Later work has determined the conditions, the processes, and to a certain extent the mechanism, of transmissible autolysis—a widespread phenomenon in the bacterial world. In spite of this its significance remains obscure and agreement is far from reached on the nature of the factors in play.

Singular it is that Twort had from the start foreseen the principal hypotheses which have since been put forward. We need not dwell on the views that it might be a new and lower form of life or that it was an invisible phase of the germ itself. Although revived by certain workers these views have not been accepted. It was otherwise with two explanations submitted by Twort, known as the parasitic and the diastasic theories, which have, with varying fortunes, prevailed in the history of transmissible lysis. Let us consider the arguments for each of these theories and see where they agree with the known facts.

1. The substances obtained from vaccinia pulp (for the staphylococcus, Twort) or from the intestinal contents (for the dysenteric group, d'Hérelle) impress on sensitive bacteria important modifications ending in conditions favourable to complete lysis.

2. The phenomenon is capable of being reproduced indefinitely—i.e., the active principles are regenerated during lysis.

3. The regeneration of the active principle, as well as the lysis, only occurs with living germs.

4. As shown by surface action and the results of dilution (d'Hérelle) the active principles have a discontinuous structure now known to be corpuscular.

5. These principles manifest a true autonomy in regard to the bacteria at the cost of which they develop (Bruynoghe, Wollman). This autonomy holds not only for the antigenic function of the active principles (Bordet and Ciuca) but also for their other characteristics.

THE PARASITIC THEORY

The persistence of certain characteristics, in the course of passage through different kinds of bacteria—e.g., antigenic control and sensibility to trypsin, Wollman and Mme. E. Wollman—suggests the existence of a power of assimilation. This, taken into account with the variability of other characteristics (virulence), leads to the conclusion that the active principles are living substances (d'Hérelle). The facts set out above appear to agree with the theory of a virus. The separate entity of the active principles, their autonomy, and their multiplication in the course of lysis are explained in this theory in the most natural way. This is d'Hérelle's particular theory which he has developed quite logically. The title of his first paper, on an Invisible Organism Antagonistic to the Dysentery Bacillus, is in itself a confession of faith. Since then d'Hérelle has continued to gather facts in support of his theory and many bacteriologists

have given their allegiance to it. To d'Hérelle the active agent is an ultra-virus parasitic on bacteria, the *Bacteriophagum intestinale* or *Protophagus bacteriophagus*. Lysis is the result of the action on bacteria of ferments secreted by the bacteriophage.

For some time this parasitic theory seemed to furnish a satisfactory explanation of the known facts. There were, indeed, a few difficulties, but these appeared to be on points of secondary importance. Thus the fact that the bacteriophages only multiplied in the presence of living bacteria was, in accordance with all that was known about filtrable viruses, but it was remarkable that their multiplication was dependent on that of the bacteria themselves (Bordet, Wollman.) Similarly how was it that bacteria, obligatory parasites, were found in media where sensitive bacteria failed to appear? Spontaneous bacteriophagy furnished a more serious difficulty. From the start Twort had noticed the apparently spontaneous appearance of transmissible lysis in pure cultures, and this fact encouraged him to discard the theory of a virus. d'Hérelle began by contesting the identity of Twort's phenomenon with bacteriophagy; the spontaneous cases of bacteriophagy, properly so-called, the supporters of the virus theory led by d'Hérelle explained by assuming the presence, either latent or occult, of pre-existing bacteriophages. Now the identity of the phenomena of Twort and d'Hérelle is well established, thanks chiefly due to the work of Gratia. On the other hand, it seems difficult to explain the numerous cases of spontaneous bacteriophagy, described by various workers, by a pre-existing contamination.

But the most serious difficulty confronting the parasitic theory is the existence of spontaneously lysogenic cultures. For those who maintain the theory of a virus it is a question of cultures being contaminated, but becoming resistant and living in symbiosis with the bacteriophage. Though not beyond the bounds of possibility such an explanation becomes extremely artificial when applied to all known cases of spontaneously lysogenic cultures. For instance F. M. Burnet, to whom we owe the most complete study of this question, has shown that all cultures of *B. paratyphosus* C, examined from whatever source (India, S. America, or Europe), were lysogenic and the bacteriophages from all these cultures were identical.

J. Bordet, studying a spontaneously lysogenic culture of *B. coli*, proved that there was neither lysis of sensitive germs nor regeneration of the active principle in decalcified medium. Now although the active principle was invariably absent during repeated passages on such a medium it reappeared when the lysogenic culture was transferred to ordinary media. It seems extremely difficult, if not impossible, to reconcile such facts with the theory of a virus. The same is true of observations I have recently made with a spontaneously lysogenic culture of *B. megatherium*.

The study of this spore-forming bacillus has a particular interest. Den Dooren de Jong³ has shown that cultures from spores which had been heated to 95°–100° C. remained lysogenic. The temperature necessary to destroy the bacteriophage produced by *B. megatherium* being 75° C. it would appear that the formation of bacteriophages de novo in cultures from heated spores and at the same time their endogenous origin was at last definitely established.

But this is not so. For Adant and Cowles have shown that spores of *B. subtilis*, "contaminated" with the corresponding bacteriophage, could be raised to a high temperature (100° C.) without the bacteriophage being destroyed. Similar results were obtained through the action of very high pressures.⁴ Neither the action of heat nor of pressure enables us to differentiate between cultures spontaneously lysogenic and those "contaminated" with bacteriophage.

Fortunately an observation of another order made on a lysogenic culture of *B. megatherium* can be brought in to refute the theory of symbiosis with an extrinsic bacteriophage. Whereas cultures on broth of Den Dooren's *megatherium* contain free bacteriophage (titre 10^{-3} – 10^{-4}), cultures on gelose do not. Lysis of such a culture by means of a drop of egg white (lysozyme of Fleming) is sufficient to cause the appearance of the bacteriophage; the active principle confined in the bacterial cells grown on gelose has been freed by the action of the lysozyme. It is an interesting fact, established by a number of titrations, that each bacterial element sets free only one bacteriophage corpuscle.⁵ Such numerical relationship between bacteria and bacteriophages would be difficult to explain by the theory of symbiosis. These findings, as well as others which cannot be enlarged on here, raise such difficulties for the parasitic theory that most bacteriologists have abandoned it. For instance, in an article devoted to bacteriophages published in July, 1933, Hoder⁶ came to the conclusion that "So many facts tell against the view held by d'Hérelle and his school that, without giving preference to any of the numerous theories formulated, it can be said with tolerable certainty that the bacteriophage is not a living being *sui generis*."

THE DIASTATIC THEORY

But if the active principles of transmissible lysis are not invisible living beings or viruses, what are they? The most striking manifestation of the phenomenon being the lysis of the bacteria attacked, Twort had conceived the idea of a particular ferment which was reformed in the course of its action. In spite of the difficulty of understanding such a process the diastatic theory has gained a favourable reception. Revived under various guises by numerous authors (Kabeshima, Gildemeister, Otto, Doerr, and to a certain extent by Bordet and his collaborators) it was at one time accepted by almost every bacteriologist; agreement was wellnigh universal that bacteriophages were soluble substances, lytic ferments, lysins, or autolysins.

Without stressing all the facts which militate against the identification of bacteriophages with lysins or autolysins—they are the same facts which have led to them being regarded as viruses—let it suffice to point out that these "lytic principles" are in fact devoid of any direct lytic action. Lysis properly so-called, as I have demonstrated,⁷ is the work of bacterial autolysins. On the other hand, research on the dimensions of the active elements in transmissible lysis carried out for several years at the institute for the Study of Colloids in Frankfurt, as well as at the Medical Research Institute in London, have assigned to these dimensions values on a very different scale from those of molecules of known ferments. From these researches it appears that the dimensions of the active corpuscles are constant for a given bacteriophage and vary for different bacteriophages, the extreme limits being, according to the method used (filtration or centrifugalisation) 8–12m μ and 75m μ (Elford and his fellow workers), or 20m μ

and 90m μ (Bechhold and Schlesinger).⁸ Summarising the results obtained in his laboratory Bechhold writes:—

"The dimensions of these corpuscles have been determined by an unexceptionable method and their form has been recognised; the elements themselves have been seen with the ultra-microscope and obtained in a pure state in quantities sufficient to be weighed."

All the fabric of ideas opposed to the parasitic theory, under the name of diastatic theories, is thus found to be baseless. And yet it might seem extraordinary to set up the parasitic theory as the solution of the problem of bacteriophage when we have just seen that Hoder and the majority of bacteriologists have definite grounds for rejecting it. In reality the quantitative data on dimensions of bacteriophages, as Bechhold has shown, permit us to discard the diastatic theory (taking the common acceptance of the word diastase), without authorising us at the same time to conclude that bacteriophage is a virus. Neither the corpuscular form of the active principles nor their dimensions prove anything in this respect. Only proof of their exogenous origin would be crucial and that proof is entirely lacking. Spontaneous bacteriophagy and especially lysogenic cultures make exogenous origin at least highly improbable.

THEORY OF HEREDITARY FACTORS

We are thus led to reject the parasitic and diastatic theories, for they are irreconcilable with the interpretation of the facts; on the one hand the corpuscular elements behaving in every way like living things, on the other the bacterial endogenous origin of these elements. Now these facts, impossible to reconcile with the classical theories, seem to find a simple explanation in the theory of hereditary factors which I have repeatedly enunciated.⁹ According to this theory the active principles of bacteriophages are particularly stable elements of cellular origin and act as a material basis for certain hereditary characters—hereditary factors in the Mendelian sense. This theory not only accounts for the facts which turn the scale now towards the virus theory, now towards the diastatic theory, but permits us to grasp facts which remain unexplained in either of these theories. The regeneration of bacteriophages is a function of the multiplication of the bacteria themselves, why there is a simple numerical relation between active corpuscles and lysogenic bacteria, why bacteriophages do not work on dead or quiescent germs. The terms bacteriophage and bacteriophagy, justified by the parasitic theory and by usage, then lose their significance and should be replaced respectively by lysogenic factors (Wollman) and transmissible autolysis (Bordet) or perhaps hereditary contagious autolysis (Wollman). I have shown that other processes of an infectious nature may have an analogous explanation, notably filtrable tumours and certain diseases of plants called mosaics.

Whatever may be the further extensions of this conception I have endeavoured here to show the new avenues which have been opened up by the study of the phenomenon of Twort-d'Hérelle. When the terms "infectious" and "microbial" became by degrees synonymous, the researches arising from the discoveries of Twort and of d'Hérelle have revealed the existence of infectious processes of non-microbial nature. In these processes certain characters (having a pathological form in the examples under discussion but not necessarily always pathological) are linked to a stable material basis and

in consequence can exist in an extracellular medium. Owing to this peculiarity these characters can be transmitted not only from mother-cell to daughter-cell (ordinary heredity) but also, through an external medium, from affected cell to normal cell (para-heredity).

The idea of a material basis for characters, which under the name of the theory of genes has proved so fertile in the study of normal and pathological heredity in the higher organisms, thus seems capable of extension to certain processes of an infectious nature which up to the present were usually attributed to genuine viruses.

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A MODIFIED PLAN FOR A GENERAL HOSPITAL

CHANGES SUGGESTED AT THE NEW WESTMINSTER HOSPITAL

By E. ROCK CARLING, F.R.C.S. Eng.

SURGEON TO THE HOSPITAL

THE lay-out of a hospital in this country usually involves a horizontal division between visiting and resident patients. Although, generally speaking, each resident case has been an ambulatory, and will be so again on discharge, there is a gulf fixed between "in" and "out" which is symbolised by a separate entrance and emphasised by a change of doctor-in-charge. One consequence of this is that the "junior" staff, who may retain that status for twenty years, have care of patients only so long as they are fit to attend for treatment, and, with but minor exceptions—for the beds allotted to them in the smaller hospitals are usually comparatively few—lose sight of those patients as soon as their condition necessitates entrance to a ward.

No doubt the burden of out-patient work tells hardly upon senior men whose reputations have brought them big practice and many calls on their time for public duties. No doubt too the "clinic" exclusively in the wards is a convenient milieu for teaching and research, but it seems illogical from the point of view of service to the patient-community that there should be a break in the personnel. There seems, in fact, little reason nowadays for the continuance of this system other than the structural plan of hospital buildings. If the division of the hospital be made vertical rather than horizontal, complete effectiveness of the "firms" that have grown up as the unit of service in the hospital would be a natural and reasonable result. This, at any rate, is the idea behind the plan now under consideration for the new Westminster Hospital.

ADVANTAGES TO THE STAFF

There was a time when the distinction between the out-patient physician or surgeon and his senior

was a very definite one. There was a time when the relations between members of a staff were those of jealousy and distance, and when harmonious coöperation was often impossible. Such a state of affairs is now certainly rare, and the rule is that men work generously together, and if the work of a firm is concentrated there will at least be every opportunity for delegation, for sharing, and for mutual assistance, that must redound to the advantage of the patients.

On a surgical floor there will be two full units and certain accessory beds. Each firm will have an out-patient consulting-room and a theatre, but the latter will be paired so that a firm will be able, on its duty days, to make use of the consulting-room and theatre of his collateral unit, unless urgent work by the other firm interfere. The out-patient rooms, though on the same floor and adjacent to the wards, will be reached by a separate part of an encircling corridor.

The patients from the first moment of their arrival will be allotted to a firm or unit and will continue under the care of the senior or junior honorary medical officer, the same sister, registrar, and house officer to the last day of their attendance; and, again, if they have other need of the hospital, always finding someone who knows them and their past history ready to remember and welcome them. The same sister who has had charge of them in the ward will have charge of them as an out-patient on discharge and follow-up. The same sister who has charge of the male patients of a firm will have charge of the female. The permanent personnel of each firm will cover all its patients. The physicians, who make less use than the surgeons of their out-patient consulting-rooms on days other than those of the official visits, do not desire a separate out-patient department for each firm, and theirs will be common to the whole general medical department but will be in such proximity to their wards that the nursing may be directed by the sister of each firm at the appropriate time.

The specialists, at any rate the ophthalmic, otorhinological, dental, and dermatological, regard their clinics as essentially ambulatory, with beds attached rather than as wards in charge of a senior fed from an out-patient department in charge of his junior.

At the present time the actual attendances—apart from unofficial visits which nowadays are many—of the senior and his junior are at least seven a week between them, and if these be appropriately spaced, since availability of rooms and theatres is unrestricted, a fuller and more complete service to the patients will result without adding to the work of the honorary staff.

ADVANTAGES TO THE PATIENT

One consequence of this fuller or less intermittent service by the honorary staff will be to facilitate a solution of the problem of out-patient waiting. There will, of course, be a "front-surgery" on the ground floor, and adjacent to this what might be called a casualty clearing station in charge of whole-time officers of the status of registrars. Besides being at hand to superintend and advise the house officers in the "surgery," their job will be to sort newcomers for their appropriate units, and to select the "teaching" cases of the day, and with an out-patient clientele such as that found at Westminster it will be possible to arrange appointment-times for a great many cases. To work such appointment-bookings smoothly there will be an almoner on each floor, in whose care all the patients of two units will find themselves. The limitation of her

work to those units will, it is believed, also permit closer relations with the general practitioners by simplifying inquiry and communication.

The continuity of nursing service that will follow upon bringing the out-patient department into close contact with the ward should benefit the patient substantially, and there are, moreover, advantages in having a nurse's training supervised in both departments by one sister. It is unlikely that the scheme will necessitate any increase of nursing staff.

It might seem at first sight that to have separate out-patient departments must involve increased capital expenditure and more expensive upkeep; but the more the details of structure are studied the less serious does this point become. The waiting space though scattered is no larger. The rooms of those specialists who require increasingly complicated apparatus are, in any case, unsuitable for use by other departments, even when unoccupied by those specialists. The out-patient rooms of the gynaecologist and obstetricians, now that there are ante- and post-natal clinics, children's welfare, and other special clinics in addition to the regular out-patient days, are pretty continuously occupied. The rooms of the surgical firms will certainly be frequently, if not always, in use, for there are many patients who attend after discharge for periodic injections, or for plasters, for dressings, and so on.

The lift service will be an additional expense, but it seems likely that economies will be effected in other directions, and if the service rendered be more efficient, the saving of time itself will be saving of money.

THE PROBLEM OF CANCER

RETROSPECT AND PROSPECT

At the beginning of October Dr. W. E. Gye succeeded Dr. J. A. Murray, F.R.S., as director of the Imperial Cancer Research Fund. His contribution to the thirty-third annual report, presented last Wednesday, is a survey of the changes in outlook on cancer since 1902 when the Fund was established. This survey is of more than ordinary interest to the general medical reader, and we make no apology for reproducing much of it in Dr. Gye's words.*

"A DISEASE OF CIVILISED MAN"

In 1902, he says, extreme confusion and pessimism on the subject prevailed in the medical profession. There was a firm belief, amounting to a dogma, that cancer was a disease limited to man and that it occurred only in civilised communities, where it was increasing at a terrifying rate. Cancer families, cancer houses, and cancer villages were believed to exist. The causative influence of geological formation, of soil, of climate, of diet, of dwelling near trees or near rivers, was discussed. Many clinicians believed cancer to be an infectious and even a contagious disease. "Cancer germs" were isolated, or demonstrated in malignant cells by special staining methods. The destruction of bedclothes and other materials which had come in contact with cancer patients was often demanded.

The morbid anatomists, however, who had done fundamental work in classifying the numerous and different types of malignant new growths and who found it difficult to reconcile the morphological appearances of a cancerous growth with those of

known processes of infection, regarded cancer as a cellular disease and propounded a number of hypotheses to explain its origin, of which only one—the Cohnheim theory of embryonic rests—has survived as a possible explanation for certain rare malignant conditions. The question whether the growth of a malignant tumour is brought about by transforming the surrounding normal tissues into cancerous tissues or whether solely by multiplication of cells already malignant was a matter for discussion and controversy. Even the fact that cancer can be cured by operation at an early stage was by no means generally accepted.

An argument advanced to support the dictum that cancer is a disease of civilisation was the alleged freedom from the disease of lower animals. It is true that veterinary surgeons had described its occurrence in dogs and horses, but the evidence was either ignored or was met by the assertion that the features of the disease did not correspond with those in man, or, alternatively, that contact with man was responsible. It is difficult now to recreate in imagination the atmosphere of uncertainty which led to such an attitude. But it must be remembered that thirty years ago bacteriology had progressed far in its triumphant career, and that many diseases had been found to be transmissible to animals by inoculating into them morbid material from human patients. Attempts had frequently been made to transmit cancer from man to various species of animals, but always without success; and it was therefore concluded by analogy that animals are resistant to cancer. Hanau's observation that a rat tumour can be transmitted to other rats by inoculating pieces of the living tissue was ignored, and Morau's confirmation of it was no more favourably received. Even Jensen's subsequent demonstration that inoculated cancer arises from the actual cells which have been introduced and not through infection of the cells of the new host might have been unrecognised if it had not opportunely coincided with the establishment of the Imperial Cancer Research Fund, which under Dr. E. F. Bashford's direction was undertaking a systematic study of the incidence of cancer in human beings and animals. This study soon showed that the disease could be found throughout the vertebrate kingdom, wherever it was looked for properly. The fact that in all vertebrates animal cells can undergo the malignant transformation and that the resultant malignant cells possess everywhere the same fundamental properties is the foundation on which the experimental investigation of cancer, as it exists to-day, is built. Of the diseases which can be produced experimentally few, if any, simulate the normal human disease so closely as cancer.

This investigation emphasised the essential unity of the phenomenon of malignancy. It indicated that the process which takes place when a normal cell becomes malignant is essentially the same in whatever species or whatever organ it occurs. From another point of view, however, it was possible, and indeed necessary, to regard cancer as a multiplicity of diseases. Cancer is a disease which may appear in almost any organ or tissue. While in animals there were found to be certain sites of predilection in which cancer occurred with exceptional frequency and which were different in the various species, even in closely related species, of animals, in man cancer is found more evenly distributed over the various organs or tissues. In man this organ incidence shows considerable variation in the two sexes and also in different peoples and races. Here, therefore,

* The complete report is obtainable from the offices of the Fund, 8, Queen-square, London, W.C.1.

the further question arises: "Why does cancer arise in this or that particular organ?"

The investigation of aetiological problems of cancer in man is based mainly on statistical data. The opinion, formerly prevailing, that its incidence was rapidly increasing was based on the crude figures representing the total mortality of cancer. Following an argument previously developed by King and Newsholme, Bashford analysed the cancer mortality statistics with reference to the different organs, considering separately the accessible sites in which diagnosis was easy and the inaccessible sites in which diagnosis was difficult. He also induced the Registrar-General to publish the figures in a table classified according to Sex, Age, and Parts Affected, and it proved possible to show that the recorded increase in cancer mortality fell largely though not entirely on inaccessible sites where it is diagnosed with increasing ease. These statistical inquiries demonstrated that cancer is *not* increasing at an alarming rate in civilised communities, or appearing (as was asserted) at earlier ages. Similarly it was shown in other investigations that the disease is found among savages as well as among civilised peoples, and in animals both wild and domesticated, carnivorous and herbivorous.

THE NATURE OF MALIGNANT CHANGE

Side by side with the general and comparative study of the disease a close examination of the phenomenon of transplantation was made by Bashford and Murray. It was found, as Jensen had already shown, that when a fragment of cancer tissue is grafted the tumour which forms is derived from the living malignant cells inoculated; there is clear evidence, at least with carcinomas, that the normal tissues of the host are not "infected"—i.e., made malignant by the inoculum. Also, it was confirmed that transplantation is successful only within the species from which the tumour is derived. A mouse tumour will not grow in a rabbit, for example, or vice versa. The failure to transmit human cancers to the lower animals now became comprehensible. It was shown, further, that the propagation of a mouse cancer in mice can be carried on indefinitely; the malignant cells live and multiply in an unlimited number of generations of normal mice.

Clear deductions may be drawn from this experience, which are important in several respects, theoretical and practical. It follows in the first place that the *primum movens* of the disease is in the cancer cell itself; among other points it is clear that successive generations of normal mice are unable to affect the malignant qualities of the transplanted cells. The practical importance of these observations lies in the fact that most "cancer cures" are based on an assumption that tumours arise and grow because of some constitutional defect in the body of the patient. It has been assumed, for example, that cancers progress because some glandular structure—such as the pituitary or the parathyroid—is discharging inadequately a function which it is supposed to possess, of controlling "growth." There is almost always a confusion in the terms employed in the statement of the theory, but the practice is uniform—the preparation of extracts of the normal gland taken from a large animal and the injection of the extracts into patients in the hope of bringing about a cure. Such treatment is unsound in theory and valueless in practice.

The demonstration by experiment of the local origin of tumours, and the proof that the disease is confined to the affected cells and is not spread by

contact and infection within the body, confirmed the conclusions reached by the morbid anatomists during the later decades of the nineteenth century and justified the operative practices of the best surgeons, who aimed at the complete removal of a tumour as early as possible. These results of experimental cancer research consolidated what had hitherto been a tentative, unstable theory; it gave a true theory of the nature of cancer which had a direct effect on surgical procedures.

But if practical medicine derived much benefit from the early results of experimental study, their effect on the theoretical conception of intracellular change was not perhaps so happy. The absence of all microscopical evidence of infection in cancers; the proof that tumours grow out of their own resources, the malignant cell using the body foodstuffs to grow and divide and form the tumour; the fact that tumours of mice could not be propagated by any means except the grafting of living cells; the species specificity of tumours—all these facts, and many others less definite, led investigators to an unshakable conclusion that the explanation of malignancy lies in some alteration in the cell itself, in virtue of which the malignant proliferation is an automatic process, independent of the presence of a continuously acting provocative agent. It is in this sense that tumours are sometimes said to be "causeless." In Ewing's words "the secret of malignancy seems still to remain enshrouded in the obscurities of intracellular life, where it will probably long remain." Nevertheless when all the facts which have been accumulated are taken into consideration we have no need to believe that the theoretical problems of cancer are insoluble.

It is an encouragement that since the Great War interest in cancer research has widened. It is no longer confined to the microscopic study of the cancerised cell and of its relationships to normal cells in the body. The attack has been extended to the very onset of the disease. In 1902 Bashford drew up a "draft scheme for inquiry into the nature, cause, prevention, and treatment of cancer" (published in 1908 as an appendix to the Fund's third scientific report) in which the possibility of producing cancer experimentally is discussed in connexion with "sweeps" cancer" and "petroleum cancer." He suggested that "a systematic study of the effects of persistent irritation of different epithelial surfaces in different species of animals might be found to have important bearings." To the Japanese investigators Yamagiwa and Itchikawa belongs the honour of demonstrating, in 1915, that cancer can be produced in this way by painting an animal with tar. This has proved the starting-point of innumerable investigations which have culminated in the preparation by Prof. Kiennaway and his collaborators of pure chemical substances with carcinogenic properties. Some of these substances are related chemically to the sterols which are normal constituents of the body. The importance of these investigations is too evident to need any comment.

THE PROBLEM TO-DAY

It is now quite clear that two aspects of the cancer problem must be sharply defined: first that which deals with the conversion of a normal cell into a malignant cell (by tar, pure chemical compounds, parasitic worms, radiant heat, X rays, &c.); and, secondly, that which deals with the properties of the malignant cell itself, seeking an explanation of its power to proliferate indefinitely.

In 1911 Peyton Rous of the Rockefeller Institute, New York, described a spindle-celled sarcoma of the domestic fowl which could be propagated not only with grafts of living cells but also by means of cell-free filtrates, and since then a score or more of filtrable avian tumours of diverse structure have been described. Each has the same remarkable property of filtrability, and the agents possess the same extreme specificity shown by the filtrates of the tumour first described by Rous. There now exists, therefore, a group of tumours caused by intracellular agents which have properties indistinguishable from the viruses.

The first reaction of pathologists to these filtrable tumours was a denial of their neoplastic nature, or, alternatively, an assertion that if they are neoplastic then these tumours are a disease of birds sui generis imitating cancers of mammals, but not of the same essential nature. But Rous and his collaborators demonstrated conclusively that if these tumours are not true new growths then the task of describing the characters of new growths must be begun again; for these growths of fowls exhibit all the properties which are accepted by competent students as characteristic of true tumours. Briefly, it may be said that apart from the property of non-cellular transmission there is no clinical, morphological, or biological difference between avian and mammalian tumours. Even this criterion of filtrability cannot be claimed as absolute. There are malignant fowl tumours, such as the spindle-celled sarcoma first described by Rous, which though as a rule easily filtrable, may pass into a state in which they do not yield active filtrates. The tumours occasionally lose growth energy and become comparatively benign; when in this state it is frequently impossible to transmit the growths by any means except by grafts of living tissue. Moreover, the recent discovery of a filtrable papilloma of the cotton-tail rabbit by Dr. R. E. Shope has broken the apparently absolute difference in respect of filtrability between tumours of mammals and tumours of birds. One of the pressing tasks of cancer research is the study of tumours of a greater variety of species of animals.

The two aspects of the problem, to which reference has been made, have lately been drawn together by experiments carried out by Prof. McIntosh at the Middlesex Hospital. Tumours were started in fowls by injecting tar subcutaneously, and the tumours thus obtained were transplanted into normal fowls. It was found for three of such tumours that it was possible, once the difficulties of propagation had been overcome, to transmit the growths by means of cell-free filtrates. If these experiments can be confirmed, the part played by tar in cancer causation is different in kind from the part played by the agent which passes through a filter candle and which can be obtained again and again from each successive generation of tumour.

Dr. Gye concludes: "This account of the systematic investigation of cancer which began in an atmosphere of ignorance and pessimism thirty odd years ago, and which has since developed into an independent discipline of medical research that is being carried on vigorously in every civilised country, is necessarily brief and incomplete. . . . But it can be said without fear of contradiction that the knowledge of the disease gained in this short time is more extensive than that of most other chronic diseases and has profoundly influenced its diagnosis and treatment. Cancer has ceased to be an unaccountable mystery, and we need no longer fear that its solution surpasses the wit of man."

MEDICINE AND THE LAW

Unregistered Practitioner Fined for Treatment of Venereal Disease

For good and sufficient reasons Parliament in 1917 prohibited the treatment of venereal disease by any person other than a registered practitioner. For infringing this statutory restriction Mr. Robert Vivian Storer was fined £100 with 20 guineas costs at Marlborough-street police-court last week. The summonses alleged that he, not being a duly qualified medical practitioner, did treat two patients for reward, that he prescribed a remedy, and by advertisement offered to treat patients for venereal disease. Mr. Lawson Walton, appearing for the Director of Public Prosecutions, explained that in May last, Mr. Storer, who had practised for many years and held the degrees of M.R.C.S. Eng. and L.R.C.P. Lond., was found guilty after inquiry by the General Medical Council of infamous conduct in having advertised a clinic at his registered address; his name had then been erased from the Medical Register. In the following July an advertisement appeared in a daily paper of the Cavendish Institute of Medical Research, 9a, Cavendish-square; it was described as a diagnostic clinic for venereal and allied infections, including determination of cure and tests of latency. Two men, who answered the advertisement, gave evidence for the prosecution last week. One called by appointment and saw Mr. Storer in a room fitted up as a dispensary. He was examined and was told he was suffering from the disease and could be cured in three months; the fee would be 100 guineas. The patient said this was more than he could afford; Mr. Storer replied that the only alternative was to go to a public clinic for nothing where the treatment would take 12 months and be very unsatisfactory. Asked about a reduced fee, Mr. Storer said he did not make a practice of reducing fees; he was full up with work, and he produced his appointment book to prove the fact. Finally he agreed to accept 40 guineas—25 guineas down and 30s. a week during treatment; but he said the treatment would be less satisfactory and would take longer. Finding the patient undecided, he offered him a treatment on the spot for 3 guineas. The patient had not the money, and was told he must send a cheque immediately. Thinking the whole matter very unprofessional, the patient left the house. In the case of the second witness, Mr. Storer was said to have expressed surprise, after showing the result of the test, that another doctor had passed the patient as free. Mr. Storer offered to cure him for 100 guineas; when the patient was shocked at the amount of the fee, he agreed to accept 25 guineas in advance and 25 for each month of treatment; his consultation fee, he said, was 5 guineas, and this, with the 25 guineas payment in advance, was paid by the patient by cheque. The patient took several treatments but afterwards got other advice and went no more to the clinic. The defence set up by Mr. Storer as regards this second patient was that the man never suffered from venereal disease, and therefore he himself could not be charged with having treated him for it. The magistrate observed that the question whether the patient did in fact suffer from the disease or not did not in his opinion arise.

Mr. Storer, giving evidence on his own behalf, said he founded the Cavendish Institute of Medical Research. He was still a qualified man and a physician and surgeon. He came from Australia at the

age of 21 to qualify as a doctor. He also took a 2½ years' post-graduate course in Vienna and London in the study of venereal disease. He then went back and practised as a specialist in Australia. He had attended medical congresses and had been associated with research as to venereal disease; he had published a book called "Sex and Disease" which had been favourably received by almost every medical journal; his research work had cost him £20,000. He had discovered that other symptoms followed the disease itself. In January, 1934, he came to London and published advertisements of the Cavendish Institute in the medical papers as a free diagnostic clinic. In December, 1934, he called at the office of the General Medical Council with a contemplated partner to ascertain if these advertisements would form any ground of complaint professionally. He never received any ruling from the G.M.C. and, having withdrawn the advertisements for two months, he afterwards reinserted them. In May last he was summoned before the G.M.C. and, thinking he was at last to receive the ruling for which he had asked, he made no defence. His name was struck off the Register; he then amended his advertisements, realising that, as regards venereal disease, his services could only be available as a diagnostician. He said that, since he had been struck off the Register, he had not treated a case of venereal disease, and indeed had sent many such cases to the doctors and staffs of public clinics in London.

Mr. Eustace Fulton argued on the defendant's behalf that diagnosis and treatment were not the same thing. The magistrate thought that, for the purpose of the statute, diagnosis was undoubtedly part of treatment. He held that the case was proved, and he accepted the evidence of the two patients in preference to that of Mr. Storer. It had been said that the defendant was a man of great skill and distinction; in the magistrate's view this statement could have no bearing on the case; it was no answer for the defendant to say "although I am technically disqualified because of advertising, I am a very fine doctor in this particular branch of doctoring." The defence intimated that there would be an appeal on the point of law—presumably as to diagnosis forming no part of treatment. On the facts accepted by the magistrate, however, treatment under Section 1 of the Act and the advertisement under Section 2 of an offer of treatment would seem to have been proved. If a man can be struck off the Register for professional misconduct and can then defy the 1917 Act by resuming practice in the treatment of venereal disease for 100-guinea fees, it is not surprising that the court should think fit to impose a substantial fine.

A Vegetarian's Diet

In the county court at Weston-super-Mare a vegetarian successfully disputed a claim from a lodging-house keeper. He had booked his rooms for a fortnight, stipulating that he and his family were vegetarians and must have vegetarian diet. He vacated the rooms after a week because the plaintiff had not given him reasonable service. The house had been overcrowded, other lodgers sleeping in the breakfast-room and in the bathroom; and the diet had been unsatisfactory, the salad being drowned in vinegar, and the potatoes hard and inedible. The judge held that, in respect both of the overcrowding and of the diet, the plaintiff had failed to give reasonable service. The defendant had therefore been justified in refusing to stay for the second week.

The keeper of a lodging-house may not be obliged to cater for everyone who insists on a special diet; if he undertakes to supply a vegetarian diet, he must reasonably keep his word.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

FATS IN THE BLOOD

Mr. C. P. Stewart, Ph.D., in a paper read to the Edinburgh Pathological Club last week, summarised investigations he has been making into the fat content of blood. Estimation of the various constituents of normal human blood (including glycerol by a newly devised method) indicates that as much as 20 per cent. of the total fatty acid found may be present in the form of simple glycerides. In the blood of diabetics the simple glycerides are generally increased, and this increase is the main factor in the very high total fat content often encountered. In pernicious anaemia the quantity of lipid phosphorus of the whole blood is generally reduced; but Mr. Stewart believes this reduction to be without significance, for he has found that the blood plasma and the corpuscles both contain a normal concentration of lipid phosphorus. The apparent anomaly is explained simply by the lack of red cells in this condition, for the concentration of lipid phosphorus is twice as great in the cells as in the plasma.

EDINBURGH ROYAL INFIRMARY

Difficulties facing the Royal Infirmary were referred to at a meeting of the league of subscribers in Edinburgh last week. The sum of £150,000 is still required to complete the extension scheme, and the infirmary's adoption of the management of the new maternity hospital will add greatly to the annual expenditure. Members of the league of subscribers contribute a small sum weekly, but are not entitled to any special consideration in view of this, and some of them have had to be transferred to municipal hospitals for treatment because of the length of the waiting-list of the Royal Infirmary. In view of their regular contributions resentment was expressed that these people should have to pay for treatment at the municipal hospitals, and further have to submit to a means test in order that the amount they should pay might be determined. This was one of the arguments used in a plea for closer coöperation between the voluntary and the municipal hospitals.

IRELAND

(FROM OUR OWN CORRESPONDENT)

FUNDS FOR MEDICAL RESEARCH

For the past two or three years a joint committee, set up on the initiative of the Royal Academy of Medicine in Ireland, and consisting of representatives of the several licensing bodies and of the Associated Hospitals Committee which promotes the sweepstakes and of the Academy itself, has been working at the formulation of a scheme for medical research in the hope of inducing the Minister for Local Government and Public Health to provide adequate funds from the monies at his disposal from the hospital sweepstakes. It was proposed to establish a research council consisting of representatives of the licensing bodies, the Academy, and the hospitals, and the Government, and the Minister

THE LANCET]

was asked to provide funds to the amount of £10,000 or £12,000 a year, the distribution to be in the hands of the council. The Hospitals Commission, the body appointed to advise the Minister as to the distribution of the sweepstakes funds, recommended the proposal to the Minister some thirteen months ago, and the long delay in the Minister's department has given rise to comment. It is now officially announced, however, that the Minister has approved of the formation of a council of nine, comprising one representative from each of the following, with an independent chairman: the senate of the National University of Ireland; Trinity College, Dublin; University College, Dublin; the Royal College, Cork; University College, Galway; the Royal College of Physicians in Ireland; the Royal Academy of Medicine in Ireland. To enable the project to be initiated, the Minister is willing to allocate a sum of a maximum amount of £10,000 for the first year's working. It is understood that the council will meet to take steps to become incorporated, and will consider and formulate proposals for the prosecution of medical research. The Minister has the appointment of a chairman under consideration.

It is not as yet clear how far the proposals approved by the Minister differ from the scheme put forward by the joint committee and recommended by the Hospitals Commission. Some changes which may cause disquietude have been made in the constitution of the council, the body approved by the Minister being smaller and less representative than that recommended to him. More important, however, than the constitution of the council will be its powers, with regard to which the official statement is vague. If its powers are to be limited to "considering and formulating proposals for the prosecution of medical research" and decisions are to rest with some other authority, much disappointment will be felt. It was an essential part of the joint committee's scheme that decisions as to the research to be carried out and the distribution of such funds as the Minister might provide should be in the hands of the Research Council.

BUDAPEST

(FROM OUR OWN CORRESPONDENT)

TERCENTENARY OF BUDAPEST UNIVERSITY

The University of Budapest was founded in 1635 by Peter Pázmány, Roman Catholic archbishop of Esztergom, and delegates from 130 universities from all parts of the world attended the anniversary of its foundation recently celebrated here with great magnificence. At the time of the Turkish invasion the older universities at Pecs, Pozony, Bratislava, and Buda were destroyed, and in his inaugural address Géza Kornis, rector magnificus, paid tribute to the love of culture which had led Hungary to found this university at one of the most troublous times of her history. He also emphasised the important part Hungary had played in preserving Western civilisation from the invaders; "Hungary stopped the influx of Tartars and Turks," he said; "and if the Magyars had not fought this battle, to-day the Koran would be taught at Oxford." He also spoke of the famous men who had worked at the University and in the medical faculty mentioned particularly János Balas and Ignaz Semmelweis. An exhibition was held in the library which illustrated the development of the University in

photographs, and included many interesting documents relating to its foundation. Among official records the original matriculation books from 1635 were on view.

A prominent feature of the ceremonies was the constitution of the Society of Doctors Sub-Auspiciis Regis. The membership of this society is limited to the very small number of graduates who have passed every examination in their university career with distinction. To such graduates from 1895 onwards Francis-Joseph, as King of Hungary, presented a valuable gold ring. After the end of the late war no awards were made, but in 1923 Nicholas Horthy, as Regent, gave leave for their continuation, granting an iron ring with the inscription "sub-auspiciis gubernatoris." During the 40 years since the award was started it has been given to 147 candidates, and the aims of the new society are to unite its members in reverence and love of their alma mater, to contribute to its maintenance and development, and to assist the university students. Dr. Tibor Verebélyi, professor of operative clinical surgery, received the ring in 1900 and his son of the same name gains it this year; while Prof. Nékám, president of the recent international congress of dermatology, has two sons who have received the honour, in 1928 and 1934.

In connexion with the celebrations the foundation-stone of the University tuberculosis clinic was laid by Bálint Homan, minister of culture. Other stones were laid by the dean and the rector of the University.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 23RD, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2860; diphtheria, 1434; enteric fever, 27; acute pneumonia (primary or influenzal), 845; puerperal fever, 36; puerperal pyrexia, 124; cerebro-spinal fever, 13; acute poliomyelitis, 10; acute polio-encephalitis, 2; encephalitis lethargica, 65; 10; dysentery, 29; ophthalmia neonatorum, 65. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 29th was 3305, which included: Scarlet fever, 1198; diphtheria, 1262; measles, 85; whooping-cough, 240; puerperal fever, 19 mothers (plus 10 babies); encephalitis lethargica, 281; poliomyelitis, 8. At St. Margaret's Hospital there were 14 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox or enteric fever, 28 (0) from measles, 6 (0) from scarlet fever, 9 (2) from whooping-cough, 32 (6) from diphtheria, 48 (16) from diarrhoea and enteritis under two years, and 53 (12) from influenza. The figures in parentheses are those for London itself.

Manchester reported 12 deaths from measles, Liverpool 4, Bolton and St. Helens each 2, no other great town more than 1. Deaths from diphtheria were reported from 20 great towns: 4 from Sheffield, 3 each from Birmingham and West Bromwich. The mortality from influenza is scattered over 21 great towns, Manchester, Newcastle-on-Tyne, and Sheffield each reporting 3, no other great town more than 2. There were 4 deaths from whooping-cough at Liverpool.

The number of stillbirths notified during the week was 269 (corresponding to a rate of 44 per 1000 total births), including 36 in London.

VOLUNTARY HOSPITALS OF YORKSHIRE.—The Yorkshire Voluntary Hospitals' committee in their thirteenth annual report record that grants to hospitals amounting to £2611 and £7445 in other contributions have been paid direct to hospitals.

OBITUARY

ERNEST WILLIAM WHITE, C.B.E., M.B. Lond.

EMERITUS PROFESSOR OF PSYCHOLOGICAL MEDICINE,
KING'S COLLEGE, LONDON

THE veteran specialist in mental disease, Prof. E. W. White, died at Betley House, Shrewsbury, on Nov. 28th, at the age of 84. He had outlived most of such contemporaries as worked in his special field.

Ernest William White was the son of Richard White of Norwich, and was educated at the Bury Grammar School, the first of the grammar schools founded by Edward VI., and ranking seventy years ago as a prominent public school. He received his



ERNEST WHITE

[Photograph by Elliot & Fry]

medical training at King's College Hospital and the Norfolk and Norwich Hospital and at King's was a highly distinguished student, winning several scholarships and medals, among others the Warneford clinical scholarship. He qualified in 1872 as M.R.C.S. Eng., and proceeded to the London degree, where at the first M.B. examination he secured the gold medal in anatomy as well as taking honours in all the other subjects.

After house appointments and a prosectorship of anatomy at the Royal College of Surgeons of England, he commenced his successful career in psychiatric medicine with an appointment as assistant medical officer to the Kent County Asylum, Chartham. This post he held for nine years, when he became resident physician-superintendent at the City of London Asylum at Dartford, and held this appointment for eight years. During this time he successfully completed his M.B. course, obtaining the M.B. Lond. in 1883, graduating in the first division, and in the following year obtained the diploma of M.R.C.P. Lond. In 1890, in succession to Prof. Edgar Sheppard, he became professor of psychological medicine at King's College, a post which he held for 20 years, when he was elected emeritus professor.

Prof. White had been an enthusiastic volunteer and acting surgeon in connexion with the Royal West Kent Regiment. Shortly after the outbreak of the European war he was appointed consultant in mental diseases to the Western Command, and later consultant to the War Office with the rank of lieutenant-colonel. He was appointed O.B.E. in 1919, and in 1920 obtained the C.B.E. (mil.).

Prof. White, who had been president of the Royal Medico-Psychological Association, made many practical contributions to the literature of his subject. To the King's College Hospital Reports he contributed papers on psychological medicine in relation to the general practitioner, and on puerperal insanity. In the *Journal of Mental Science* he published papers on epilepsy connected with insanity, on the remodeling of old asylums, and on the care and treatment of persons of unsound mind in private houses and

nursing-homes. Papers from his pen appeared in *The Lancet* on the association of insanity with myxœdema and on lunacy law reform, while in the *British Medical Journal* he summarised his war experiences with the Western Command in a paper on shell-shock and neurasthenia.

After his retirement from the City of London Mental Hospital he became a part proprietor of "Fenstanton," Christchurch-road, Streatham, in association with the late Dr. Henry Rayner and Dr. Outterson Wood, and continued his interest to the present time in this licensed home for 30 female mental patients. Latterly he lived at Shrewsbury and only occasionally visited London. But those of his contemporaries who remain and many of his old students remember him as a sound exponent of his subject.

ROBERT HERBERT MILLS-ROBERTS, C.M.G.,
F.R.C.S. Edin.

Robert Herbert Mills-Roberts, who died in a nursing-home at Bournemouth on Nov. 27th, was the son of Robert Roberts, J.P. of Plas Meinl, Festiniog, and was born in 1862. He received his medical education at St. Thomas's Hospital. He took the double English qualification in 1887, and in 1893 obtained the diploma of F.R.C.S. Edin. He held numerous residential appointments, being house officer at the Stroud General Hospital, the Birmingham General Hospital, the Leicester Infirmary, and the Royal United Hospital, Bath, and then went into practice in Wales as surgeon to the Dinorwic Hospital and quarries, Llanberis, a post which he held until the outbreak of the European war. When he joined up in 1914 the life of a military surgeon was not new to him as he had served with the Welsh Hospital in the South African war, when he was mentioned in dispatches and received a medal with clasps and the C.M.G. In the European war he did important service. Going out with the British Expeditionary Force he served throughout the whole period of hostilities, being at first second in command of the 6th Royal Welsh Fusiliers, and later officer commanding 131st Field Ambulance and the 41st Stationary Hospital with the rank of lieutenant-colonel. At the conclusion of hostilities he was appointed deputy commissioner, medical service, North Wales and Shropshire (Ministry of Pensions).

Colonel Mills-Roberts was widely known in the district where he resided, as his father had done before him, while in athletic circles half a century ago he was famous as a goalkeeper under Association rules. He was then a Welsh international player, and in 1888 kept goal for the Preston North End Club, when the club won the championship without having a goal scored against them.

REBUILDING OF QUEEN CHARLOTTE'S.—The Duke of York on Nov. 26th presided at a dinner held at the Grocers' Hall in aid of a fund for the rebuilding of Queen Charlotte's Maternity Hospital, London, which, when completed, will be the largest maternity hospital in the Empire. Building is to be started early next year and it is hoped to provide 230 beds with both public and private wards at a cost of £300,000. The first section, comprising 75 beds, will cost £80,000, and already a large proportion of this has been given or promised. The scheme includes a home for nurses and a hostel for students.

PANEL AND CONTRACT PRACTICE

The New Act

IN about a month's time approved societies will be busy issuing some 18 million health insurance contribution cards, for the first half-year of 1936, to their members. The Minister of Health has arranged for a special leaflet to be issued with each contribution card explaining the provisions made in the 1935 Act for continuing the insurance of persons who fall out of employment. In future, so long as an insured person remains entitled to sickness and disablement benefits, no reduction will be made in the rates of those benefits because he has been unemployed, provided that proof of unemployment is given to his approved society in good time, ordinarily by means of a franked contribution card. A person who had been continuously insured for ten years at the commencement of his "free insurance period" (which lasts from eighteen months to two years from cessation of employment) will have his insurance extended from year to year provided he continues to prove his genuine unemployment—again by means of franks. During these "extended insurance periods" he will remain a member of his society and will continue to be insured so far as pensions are concerned. He will lose his sickness and disablement benefits, but will retain medical, maternity, and any additional treatment benefits provided by his society. Many insured persons who had lost their title to medical benefit by reason of prolonged unemployment, under the 1932 Act, will be restored to benefit, but surely the super-optimist is the insurance practitioner who, assuming that every person who had ceased to be insured during the past three years would be reinstated in benefit, rang up his insurance committee to ask whether the limit of 2500 would be suspended so as to allow all his old patients to be restored to his list.

Certificates and Their Uses

There is an increasing tendency on the part of employers to inform their staffs that they may submit for inspection forms Med. 40 when absent from work owing to illness. The Manchester medical (and panel) committee recently took up the impropriety of a letter addressed by a local firm to their employees who are absent from work for some days owing to illness, requesting the employee to allow the firm to see the form Med. 40 obtained from the doctor. The panel committee requested the insurance committee to direct the firm's attention to the fact that insurance practitioners are required to issue medical certificates to their patients free of charge only for the purposes of National Health Insurance. The insurance committee decided to receive the panel committee's letter.

The "House Doctor"

The London panel committee have also been having a little trouble with a firm of employers. An insurance doctor had on his list a number, about one hundred, of the employees of a firm who resided in a hostel. The doctor sold his practice to another practitioner who learnt that the firm were exhibiting a notice in the hostel to the effect that in consequence of the resignation of Dr. A. it had been decided to transfer to Dr. C. (not the successor to Dr. A.'s practice), and accordingly it would be necessary for all medical cards to be handed in to the steward's office duly completed in part B. The successor

endeavoured to persuade the firm to withdraw the notice, but the directors could not see their way to do so, whereupon the assistance of the local medical and panel committee was invoked. The committee got in touch with Dr. C. who stated that he had never visited the hostel and was unaware of the exhibition of the notice; he wrote to the firm asking that the notice should be removed and this was done. A representative of the firm stated that there was no compulsion upon any of their employees to transfer to Dr. C. and that they would be informed that they could choose any insurance doctor in the district. Later Dr. B. wrote to say that one of the two employees who had signed a statement that they wished to stay on his list had been dismissed, and that others whom he had asked to sign a similar statement had declined for fear of dismissal. Both Dr. B., the successor, and Dr. C., the "house doctor," appeared before the committee. Dr. B. brought no witnesses as he said the insured persons feared their appearance might jeopardise their positions with the firm.

Dr. C. stated that just after he had seen the secretary to the firm, and had agreed to act as medical adviser to the inmates of the hostel, he left London for his holiday. He had had no previous experience of insurance work and was quite unaware that his acceptance of the insured persons was detrimental to Dr. B. He was also unaware that a notice had been posted in the hostel until Dr. B.'s letter acquainted him of the fact. He called as witness the secretary of the firm, who confirmed everything that the doctor had said. The secretary explained that the sole desire of the firm was to see that their employees were on the list of an insurance doctor. He now realised that the exhibition of the offending notice was contrary to the National Health Insurance Acts, but he was not aware of this fact at the time the notice was exhibited. He added that no employee had been dismissed because she had signed a statement, but that one had been dismissed because she was unsatisfactory. The committee came to the conclusion that the canvassing which took place on Dr. C.'s behalf was entirely without his knowledge and consent, and they directed that this decision should be conveyed to all the parties concerned. The clerk of the insurance committee was however asked to communicate with the firm pointing out that the notice was an interference with the right of free choice of doctor conferred on every insured person by the National Insurance Acts and suggesting that a further notice should be exhibited in the hostel informing the employees that they are entitled to apply for admission to the list of any insurance practitioner without fear of penalty.

This was done and the firm readily concurred in the suggestion. But the incident illustrates the difficulty which sometimes occurs of convincing employers that although they pay a considerable proportion of the value of stamps affixed to contribution cards they have no right to interfere with any of the benefits conferred upon the insured person.

Incapacity after Confinement

Sickness or disablement benefit is in no circumstances payable to a married woman in respect of incapacity occurring during the four weeks following confinement. Unmarried women, on the other hand, although ordinarily disentitled to sickness or disablement benefit during those four weeks can be paid sickness or disablement benefit if it can be shown that the incapacity is not connected directly or indirectly

with the confinement. Section 13 (7) of the 1924 Act is the relative enactment on the subject. An insured person recently complained to the Scottish Department of Health that her insurance practitioner had refused to issue a certificate of incapacity for work to her. The reply of the doctor showed *inter alia* that three weeks after the confinement of the insured person, which took place in an institution, she requested him to give her a certificate of incapacity but that, having regard to the provisions which are set out above, he had refused to certify. Furthermore, any disability which the patient was suffering was due to her confinement three weeks previously and this confirmed him in his refusal to issue the certificate of incapacity. The patient's father later informed the doctor that the approved society were ready and willing to pay the benefit if he would issue the necessary certificates, whereupon he asked that this request might be put into writing. Needless to say, no such written request was forthcoming, but the patient's father returned to the doctor and stated that he would refer the matter to the Department of Health, in which course the doctor acquiesced. The insured person then went to the employment exchange and "signed on." A copy of the letter

from the doctor was transmitted to the Department of Health, who replied that in the circumstances stated a certificate of incapacity on a date within four weeks after the date of the insured person's confinement was not required for National Health Insurance purposes and that the doctor was accordingly in order in refusing to issue such a certificate. The clerk of the insurance committee is now to write and request the observations of the approved society of which the insured person is a member. It is, perhaps, desirable that insurance practitioners should again be warned of the undesirability of paying too much attention to messages alleged to have emanated from approved societies or their representatives.

This occurred at Glasgow. The London panel committee has also taken note of the fact that although the certification of pregnancy has been eased of late the approved societies seem to have done nothing to curb the activities of their agents who continue to encourage pregnant women to apply for sickness benefit for a number of weeks before and after confinement. This action adds to the doctor's difficulty as the patient believes what she prefers to believe, especially when the agent's tale is in conformity with her own desires.

PUBLIC HEALTH

The River Tees : a Survey of Pollution

THE Water Pollution Research Board has just issued a second report¹ on the River Tees which was selected some time ago for close investigation as a typical polluted, but not too heavily polluted, river. The object of both these reports has been to find the effect of different sources of pollution and to determine to what extent the various discharges should be purified if serious pollution is to be avoided.

The present report concerns the tidal reaches of the Tees, which extend from High Worsall to the sea, a distance of about 25 miles, and include the water flowing past Stockton, where the industrial and urban features become marked, Middlesbrough and near Billingham. The salmon and trout fishery, once important, is declining, and it is evident that this is due mainly to sewage and industrial pollution. The nature of this and its effects on the chemical character of the water and on the varied flora and fauna have been investigated by a group of chemists and biologists, who have been able to compare their findings with those on unpolluted streams—the Tay and the Tamar—somewhat similarly situated with regard to the sea, that is, possessing like the Tees fairly well-defined fresh-water, brackish and marine regions. The Tees is a river in which fresh and salt water do not mix intimately; definite stratification occurs, the lighter fresh water floating over the salt water coming from or ebbing to the sea. It is remarkable that not only in the Tees but in the two other rivers the zone of greatest variation in salinity is also that of most restricted flora and fauna. Since, in the Tees, this zone is also that of maximum pollution the comparison is valuable as the sparsity of life might have been entirely attributed to pollution, whereas it is evidently in part due to the relatively few species which have been able to accommodate their mode of living to rapid changes of concentration of ions and consequent

variation of osmotic pressure in the medium in which they live. That pollution also has some share in causing the relative *paucity* of life in the Tees is shown by the very few *minnows* and shrimps in the region in question.

The kinds of pollution reaching the Tees are very varied. The untreated sewage of 280,000 people is an important factor, but effluents from coke oven by-product works contribute approximately two tons of tar acids and a ton of cyanide daily. The effect of these rather active poisons on living things already debilitated by whatever specific toxic effect (if any) sewage may possess, and by its demands on dissolved oxygen (at times reducing the saturation of this gas in the water to 5 per cent. of that found in pure water in equilibrium with air) is obviously likely to be great. It appears that cyanides are more virulent than tar acids, although the experiments made for the Ministry of Fisheries several years ago showed tar acids to be very deadly to the trout at Alresford, Hants.

In the Tees, as we believe is the case in most polluted rivers, the variation of dissolved oxygen is seasonal. In summer, when the high temperature of the water increases the rate of biochemical action, the demand of organic polluting matters for oxygen approaches closely the rate of absorption of oxygen from the air, supplemented though this is by photosynthetic processes; the decreased fresh-water flow also leads to a more lengthy sojourn of polluting matters in the restricted waters of the river. In winter, slow rates of demand and high fresh-water flow allow a higher oxygen content.

This brilliant research, which is a fine example of what can be done by a group of allied workers in different fields, has not been confined to an investigation of conditions in the river, but has been supplemented by experimental work in the laboratory on the action of the relevant effluents and their constituents on various organisms and on the means of purification of effluents. These and other inquiries have thrown light on the problem of polluted rivers in general and the means of restoring them to some-

¹ Department of Science and Industrial Research, Water Pollution Research, per No. 5, Survey of the River Tees, Part I, Chemical and Biological, by W. B. Alexander and R. Bassindale. H.M. Stationery Office. 2s.

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GENERAL MEDICAL COUNCIL

WINTER SESSION, NOV. 26TH-DEC. 3RD, 1935

Penal Cases Referred by the Dental Board

The Case of Aaron Leslie Barnett, registered as of 5, Robert-street, Londonderry, "Dentist 1921," the erasure of whose name from the Dental Register was recommended after investigation of the following charge :—

That being a registered dentist you have canvassed for the purpose of obtaining patients and in particular in or about the month of March, 1934, canvassed Mrs. Ruby Hutton and subsequently extracted her teeth and supplied her with a denture.

Mr. Barnett attended and was represented by Mr. Ifor Lloyd, counsel, instructed by Mr. Meyer Cohen, solicitor. Mr. Lloyd addressed the Council, pointing out that the only evidence before the Board had been an illiterate woman from Londonderry and a "free sample" post card ordering $\frac{1}{4}$ lb. of Ty-phoo tea to be sent to her on Mr. Barnett's recommendation. After deliberation in camera the President announced that the Registrar had been directed to erase Mr. Barnett's name from the Dental Register.

The Case of William Ainslie Duncan, registered as of 5, Myrtle-street, Glasgow, "Dentist 1921," who had appeared before the Dental Board on the charge :—

That being a registered dentist : (1) You have permitted an unregistered person—namely, Daniel MacLachlan, to practise dentistry in your name, and in particular in connexion with the dental treatment of Wilhelmina Davidson and Robert Kelly, and that you have thereby enabled the said Daniel MacLachlan to practise as if he were registered. (2) You have assisted, counselled, and encouraged an unregistered person—namely, Daniel MacLachlan, to practise dentistry for your own benefit.

The Dental Board had found the charges proved and recommended the erasure of Mr. Duncan's name.

Mr. Duncan was not present, nor was he represented. After deliberation in camera the President announced that the Registrar had been directed to erase his name.

Penal Cases Adjourned from Previous Sessions

The Council then proceeded to the consideration, adjourned from May 28th, 1935, of the *Case of Aldo Castellani*, registered as of 23, Harley-street, London, W.1, Hon. K.C.M.G., M.D. Univ. Florence, 1899; M. 1906, F. 1922, R.C.P. Lond., who had been summoned to appear before the Council on a charge of infamous conduct in a professional respect. Sir Aldo appeared and was accompanied by Mr. T. Carthew, counsel instructed by Messrs. Le Brasseur and Oakley, solicitors for the London and Counties Medical Protection Society. Mr. G. O. Slade, counsel instructed by Messrs. Pennington and Son, appeared for the complainant and applied to the Council for a hearing in camera. Mr. Carthew opposed this application as his client wished the charges to be heard in public

to avoid misunderstanding. The Council decided to hear the case in camera, and after the hearing the President announced that the charges had not been found proved.

New Penal Cases

A CHARGE OF PROFESSIONAL MISCONDUCT

The Case of Dorothy Miller, registered as of Hollyburn P.O., West Vancouver, B.C., Canada. M.B., Ch.B. 1916, U.Glasg., who had been summoned to appear before the Council on the following charge :—

That being a registered medical practitioner you abused your position by committing adultery with Roy Keating Clay, who and whose wife were patients of yours, of which adultery you were found guilty by the decree of the Supreme Court of British Columbia in Divorce and Matrimonial Causes dated June 14th, 1934. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The complainant was Mrs. Alice Keating Clay.

Complainant and respondent did not appear, but the latter was represented by Mr. W. G. Fordham, Council, instructed by Messrs. Johnson, Jecks, and Colclough.

Mr. Winterbottom put in the documents of complainant's case and a transcript of the divorce case. Mrs. Clay had declared, he said, that during their residence in West Vancouver Dr. Miller had attended them professionally from March, 1929, and they had called her in without previous acquaintance. Accounts had been rendered and paid by both husband and wife. Mr. Clay had been attended continuously for paratyphoid in 1929. In 1930 Dr. Miller had taken Mr. Clay in her own car to hospital for a diagnostic test; for this he had paid by cheque. Copies of prescriptions were exhibited. Dr. Miller's reply was that prescriptions were generally dictated by telephone in West Vancouver and she had often telephoned the drug store on behalf of friends and patients. She did not consider that this constituted professional relationship. Friends and patients often telephoned repeat orders of prescriptions. Mr. Winterbottom suggested that one or two of the prescriptions were not such as a layman could telephone. In 1930 Mr. and Mrs. Clay had gone to China for a trip and before their departure Dr. Miller had refused to accept payment on the ground of friendship. They had therefore brought back presents for the doctor from China, and had subsequently given her gifts.

Mr. Winterbottom read five statutory declarations from friends of the Clays, confirming that Dr. Miller had been regarded as the family doctor, and that the first introduction had been a professional one. One writer declared that the Clays had been a model couple until the doctor had come between them. The divorce case had been heard on June 4th, 1934. Mr. Clay had there said that trouble between him and his wife had started about two years before. Mr. Clay had declared that his wife refused to divorce him for any offence other than those with Dr. Miller.

Mr. Fordham then addressed the Council and submitted that when a case of this kind depended solely on affidavit, the charges ought to be very thoroughly proved. It was unfortunate that the evidence of Mrs. Clay and two of her witnesses had been sworn before a notary who was a partner in the firm of solicitors employed by her. He read two statutory declarations, from a Mr. and Mrs. Glover, wherein it was stated that Mrs. Clay and her lawyer had brought much pressure to bear on them to sign affidavits of which they did not approve. Mrs. Glover had no knowledge of any treatment of Mr. Clay

(Continued from previous page)

thing like a normal condition. It is hardly too much to hope that in time to come these workers will be reporting on a restored Tees, again full of fish, whilst still supporting flourishing industries. This is the *raison d'être* of the Water Pollution Research Board.

by Dr. Miller or of any improper conduct. Mrs. Clay and her lawyer separately had told Mrs. Glover she was their only witness and she must come, and the latter had offered to pay for them what they owed to Dr. Miller if Mrs. Glover would go and "sign the papers we want." The lawyer had become very angry and had said: "We are going to get Dr. Miller out of the profession, even if she is a good doctor, but to do that we must have Mrs. Glover's affidavit." Mrs. Glover had been working in the Clays' house from 1929-1931. Mr. Fordham argued that at the time of the alleged offence the relationship of doctor and patient had long ceased to exist. The parties had been on terms of social intimacy. The first charge of misconduct was 1934. The only professional accounts paid had been on behalf of the wife, not the husband, and all treatment had ceased in 1932. Mr. Clay had called in another doctor in 1929 and 1931. If relation of doctor and patient were ever to cease, Mr. Fordham argued, there could be no more potent test than the consultation of another doctor. Mrs. Clay had not contemplated divorce proceedings (which had in fact been taken) but had preferred to report the matter to the Council. Dr. Miller claimed that she was continually meeting these people and they were continually asking her what to use for various minor ailments; the prescriptions put in evidence were the result of telephone messages, written out by the chemist for his records. The only presents given to respondent were given in 1930 and could not therefore refer to the alleged professional attendances in 1931 and 1932. It was admitted that the parties met for the first time on a professional basis, but this had ceased at the end of 1929 and had never been resumed. It was common ground that it had ceased in 1932. The adultery in 1934 had no sort of relevance to the opportunities of the doctor during professional attendance in 1929. With a woman doctor the circumstances were in the very nature of things different from the abuse by a man of privileged access to the bedside of a woman patient. No opportunity had been abused here and no trust broken.

Mr. Winterbottom, replying, pointed out that six prescriptions had been given within 21 days, but agreed that there was no evidence of remuneration after the first two payments of 9 dollars.

After deliberation in camera the President announced that the Council had not seen fit to direct the erasure of Dr. Miller's name.

CHARGES OF DRUNKENNESS

The Case of Florence Joseph O'Driscoll, registered as of West House, Ramsey, I.O.M., M.B., B.Ch. 1928, N.U.Irel., who had been summoned to appear before the Council on the following charge:—

That you were convicted: (1) On August 3rd, 1931, at the Clerkenwell Police-court, of being drunk, and were fined 10s. and 11s. costs, or seven days' imprisonment; (2) On August 16th, 1933, at the Liverpool City Police-court, of being drunk and incapable, and were fined 10s. or ten days' imprisonment; (3) On July 30th, 1935, at the Liverpool City Police-court, of being drunk and disorderly, and were fined 40s. or one month's imprisonment.

Mr. O'Driscoll appeared, but was not accompanied by any legal representative. Mr. F. P. Winterbottom, solicitor to the Council, put in the charges and police reports and read correspondence about the case. Respondent had pleaded loss of sleep and promised complete abstinence after the second conviction. In the third conviction respondent had been arrested in company with a woman who had previous convictions for indecent conduct and prostitution.

Mr. O'Driscoll addressed the Council, pointing out that at the material times he had not been engaged in medical work. The woman had accosted him and, before anything else could happen, the policeman had arrived. He expressed his deep regret and promised to abstain in future.

After deliberation in camera the President announced that the Council had decided to postpone judgment for twelve months subject to the usual provisos as to testimonials and good conduct in the meanwhile.

The Case of John McCarren, registered as of Brookvale, Cavan, L., L.M. 1926, R.C.P. Irel.; L., L.M. 1926, R.C.S. Irel., who had been summoned to appear before the Council on the following charge:—

That you were convicted at the Liverpool City Police-court: (1) On April 2nd, 1930, of being drunk and disorderly, and were fined 20s. or 11 days' imprisonment; (2) On Jan. 13th, 1932 (in the name of John Patrick McCarren), of being drunk and disorderly, and were fined 15s. or six days' imprisonment; (3) On April 30th, 1935 (in the name of John Gerard McCarren), of being drunk and incapable, and were fined 10s. or six days' imprisonment; (4) On May 2nd, 1935 (in the name of John Gerard McCarren), of being drunk and incapable, and were fined 20s. or 11 days' imprisonment.

Mr. McCarren did not appear, nor was he represented. Mr. Winterbottom laid the facts and correspondence before the Council. Respondent had written that he had not practised medicine, except for a few days, during the previous year and that he had no intention of practising, except in case of war, in the near future. He sent testimonials from the Cavan Board of Health.

After deliberation the President announced that the Council had postponed judgment until November, 1936, subject to the usual provisos; it would be desirable in his own interest that Mr. McCarren should then attend.

The Case, adjourned from Nov. 28th, 1934, of *George Francis Maher*, registered as of Ballymore House, Goold's Cross, Co. Tipperary, L.R.C.P. Edin. 1925; L.R.C.S. Edin. 1925; L.R.F.P.S. Glasg. 1925, who had been summoned to appear before the Council on a charge of having been convicted twice of driving a motor-car under the influence of drink. Judgment had been postponed.¹

Mr. Maher attended, and Mr. Winterbottom read three testimonials to his conduct. After deliberation the President announced that the Council had decided not to erase Mr. Maher's name from the Register.

The Case of Robert Louis Portway, registered as of c/o Westminster Bank, 34, Borough High-street, London, S.E.1, M.R.C.S. Eng. 1916; L.R.C.P. Lond. 1916; D.P.H., R.C.P.S. Eng. 1921, who had been summoned to appear before the Council on the following charge:—

That you were convicted: (1) On June 11th, 1930, at Bow-street Police-court, of exceeding the speed limit in a motor-car, and were fined 15s.; (2) At the County of London Sessions commencing on Oct. 20th, 1931, of driving a motor-car whilst under the influence of drink, and were fined £50 and £25 costs and disqualified for holding a driving licence for five years; (3) On May 28th, 1935, at the Marlborough-street Police-court, of being drunk and disorderly, and were fined 20s. and 10s. 6d. costs.

Mr. Portway appeared, accompanied by Mr. Oswald Hempson, solicitor. Mr. Winterbottom put in the convictions and read correspondence. Mr. Hempson objected to the introduction of police

¹ THE LANCET, 1934, II., 1254.

reports. The Legal Assessor said that it was the practice of the Council to accept such reports rather than bring police officers to give evidence, but if Mr. Hempson maintained his objection he would have to rule the statements of police officers out of order. Mr. Hempson did not press his objection, but said that if they were read he would have to call his client to refute them.

Mr. Portway, giving evidence, explained that at 1 o'clock on the night of May 28th he was returning from a dance and was accosted by two prostitutes. He had crossed to the point duty policeman to complain and by the time the policeman looked round the women had gone away and the policeman had taken him straight to the station. He admitted having taken some drink and having lost his temper. He had been very worried on that day by a quarrel with his only surviving relative, but since then he had been very moderate in drinking and was determined to go straight in future. In answer to the President, he said he was not now in practice. Mr. Hempson briefly addressed the Council and put in testimonials to Mr. Portway's character.

After deliberation in camera the President announced that the Council took a grave view of such offences, but had decided to postpone judgment for twelve months.

RESTORATIONS

The President announced that the Council had decided to restore to the Medical Register the names of James Lionel Bocarro, Philip Henry, and Harry Rubinstein.

INFRINGEMENT OF D.D.A. REGULATIONS

The Case, adjourned from May 29th, 1935, of *Valentine Robert Hirsch*, formerly registered as of 70, Westbourne-terrace, W.2, and now registered as of 17, St. Stephen's-square, W.2, M.R.C.S. Eng. 1916; L.R.C.P. Lond 1916, who had been summoned to appear before the Council on the following charge:—

That you were on Oct. 31st, 1934, convicted at the Marylebone Police-court of the following misdemeanours, viz: (1) That being a person authorised to prescribe for dangerous drugs, you did fail to comply with the Regulations (date of offence, July 18th, 1934), and were fined £5 and 3 guineas costs; (2) That being a person authorised to prescribe for dangerous drugs, you did fail to comply with the Regulations (date of offence, August 24th, 1934), and were fined £5; (3) That being a person authorised to prescribe for dangerous drugs, you did fail to comply with the Regulations (date of offence, Sept. 17th, 1934), and were fined £5.

At the conclusion of the hearing on May 29th, 1935, when Mr. Hirsch was not present and was not represented, the President announced that the Council had decided to adjourn the consideration of the case until the November Session.

Mr. Hirsch now attended, accompanied by Dr. R. J. Hearn, Counsel.

Mr. Winterbottom outlined the case against respondent and Dr. Hearn addressed the Council, saying that respondent had really thought he was doing a service to the patient who was matron of a nursing-home. He had acted foolishly and unthinkingly.

Mr. Bone inquired which regulation had been infringed, and this was ascertained. He also asked if any application had been made to the Home Office for restoration of the licence, and Dr. Hearn replied that Mr. Hirsch was awaiting the result of this case.

After deliberation in camera the President said that the convictions proved that respondent had

not appreciated his responsibilities under the Act; nevertheless, the Council had not decided to direct the Registrar to remove his name, trusting that these convictions would be a lesson to him.

ALLEGED MISCONDUCT

The Case of Frank Beauchamp Martin, registered in the Colonial List as of c/o Westminster Bank, Haymarket, London, S.W.1, M.B., B.S. 1908, U.Melb.; F.R.C.S. Eng. 1919, who had been summoned to appear before the Council on the charge that being a registered medical practitioner he had abused his position by improper relations with a patient on various occasions between January, 1933, and January, 1935, during which period she was under his care, and that in relation to the facts so alleged he had been guilty of infamous conduct in a professional respect.

The respondent appeared, accompanied by Mr. O. Hempson, for the Medical Defence Union, and complainant was represented by Mr. W. A. L. Raeburn, counsel, instructed by Messrs. Julius White and Bywaters. The case, on the application of complainant's counsel, was heard in camera. After a hearing of two whole days, the President announced late on Monday night that the Council had not found the charges proved to its satisfaction.

Registration of Foreign Dentists

THE DENTAL EDUCATION AND EXAMINATION COMMITTEE had before it an unusually large number of applications for registration by foreign dentists. Sections 9 and 10 of the Dentists Act, 1878, enable the Council to authorise the registration in the Dentists Register as foreign dentists (without further examination in the United Kingdom) of persons who are not British subjects, or who have practised for more than ten years outside the United Kingdom, provided they have obtained some recognised certificate granted in a foreign country entitling its holder to practise dentistry or dental surgery and furnishing sufficient guarantees of the possession of the requisite knowledge and skill for its efficient practice. Should the foreign degree or qualification not appear in the list (on page lxxviii of the Dentists Register) the Council requires from the applicant such information as may enable the Council to determine whether the degree or qualification has been granted after a course of study and examination substantially equivalent to those required of candidates in this country. Having satisfied the committee in these particulars the following applicants are to gain access to the foreign list of the Dentists Register.

Adler, Max Martin, D.M.D.	Cohn, Erich, D.M.D.	U.Koenigsberg, 1922.
U.Wurzburg, 1924.	Ehrmann, Sacki, D.M.D.	U.Frankfurt, 1921.
Auerbach, Richard, D.M.D.	Engel, Richard, D.M.D.	U.Wurzburg, 1921.
U.Frankfurt, 1921.	Grundmann, Margarete (formerly Bernstein), D.M.D.	U.Frankfurt, 1929.
Baschwitz, Ernst, D.M.D.	Herzberg, Leo, D.Phil.	U.Berlin, 1914.
U.Berlin, 1922.	Herzfeld, Kurt, D.M.D.	U.Hamburg, 1927.
Becker, Victor, D.Phil.	Isakowitz, Erich, D.M.D.	U.Koenigsberg, 1921.
U.Berlin, 1902.	Josephs, Olga (formerly Herzberg), D.M.D.	U.Wurzburg, 1920.
Block, Curt, D.M.D.	Kaliski, Wilhelm, D.M.D.	U.Cologne, 1930.
U.Wurzburg, 1921.	Kallmann, Ernst, M.D.	U.Frankfurt, 1920.
Blumenau, Ernst, M.D.	Kapp, Fritz, D.M.D.	U.Wurzburg, 1921.
U.Frankfurt, 1919.	Karp, Jakob Leon, D.M.D.	U.Berlin, 1920.
Borchardt, Max, D.M.D.		
U.Greifswald, 1920.		
Borkon, Bernhard, D.M.D.		
U.Koenigsberg, 1931.		
Brandt, Lili (formerly Blumenthal), D.M.D.		
U.Wurzburg, 1931.		
Brann, Curt Harry, D.M.D.		
U.Berlin, 1930.		
Brück, Walther Wolfgang, D.M.D.		
U.Breslau, 1925.		
Calmsohn, Curt, D.M.D.		
U.Frankfurt, 1921.		

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As your article states, such fully equipped teachers are available; but are their services being used by the teaching hospitals? Until they are, the student cannot be given an adequate background of training to prepare him to meet the problems which will confront him in any branch of clinical medicine or surgery which he will follow later. The public will continue to be inadequately served, and the charlatan will continue to flourish.

I am, Sir, yours faithfully,

Brook-street, W., Dec. 3rd.

RALPH A. NOBLE.

To the Editor of THE LANCET

SIR,—Your leading article of Nov. 23rd suggests that there is considerable disagreement about the teaching of medical psychology. The controversy which rages in various sections of the lay press shows that the general public feels a certain amount of dissatisfaction with the diagnosis and treatment of mental illness. It would seem to me that these two things are related. We do not know enough about medical psychology, psychopathology, and psychotherapy—particularly in relation to the psychoses. There is an urgent need for research. The research which is performed in mental hospitals is mainly done from an organic point of view and the work is carried out by an enthusiastic junior—the senior is awaiting the coming of a clinical nirvana in the shape of a superintendentship. On the other hand, the psychotherapist who works outside a mental hospital must, by the nature of his work, pass long hours in his consulting-room and has little time to correlate his findings. It is a pity that we have no proper organisation to encourage research in psychological medicine, and that there is no honour or prize, not necessarily of monetary value, given for the best research of the year. As it is, the research worker is never able to feel that his work is appreciated.

To me Dr. Ross is sugaring his pill so much that it is all sugar. Why should only that psychology which is acceptable "to all intelligent persons" be taught? Would any other branch of medicine accept such a restriction? Are there no other "warring schools" in any other branch of medicine? It would be more reasonable to teach impartially the different doctrines and let the student select what he feels is of value in exactly the same way as he does in any other branch of medicine. In any case the schools war on philosophical grounds and these are of less interest to the clinician than technical psychotherapy. A great deal of harm has been done to psychology by not emphasising to the student that the function of analytical psychotherapy is really to release emotion and that the sole aim in exploring the unconscious is to do this. If students were taught how to diagnose properly, then, when they became practitioners, they could sort out and treat the anxiety states and other minor surgery of the mind while passing on to the specialist the prepsychotics, severe hysterics, obsessionals, &c., for more severe operations.

It is better for the practitioner to learn to treat those cases which yield easily to treatment and not to attempt the more difficult ones. Every student should leave hospital with the knowledge how to do a simple analysis. If he uses this knowledge he will acquire a wisdom which will enable him to pick what he needs from the various schools of psychological thought.

I am, Sir, yours faithfully,

Harley-street, W., Nov. 29th.

CLIFFORD ALLEN.

THE MEDICAL REGISTER

To the Editor of THE LANCET

SIR,—I am directed by the President of the Council to say that he would be glad if you could publish this intimation that any orders for the office edition of the Medical Register, 1936, published by the Council at the special price of 10s. a copy, post free, must be received, with a remittance, at the office of the Council not later than Dec. 31st, 1935.

The office edition differs from the ordinary edition of the Register to the extent that it does not contain reprints of the Medical and Dentists Acts and other preliminary matter, and is printed on more inexpensive paper and bound in boards. It includes, however, the same entries relating to registered medical practitioners as are included in the ordinary edition, and is therefore equally serviceable to public authorities and others who find it necessary to ascertain whether particular persons are registered medical practitioners or not.

I am to take the opportunity of stating that the Council also prepare monthly lists of names added to, and removed from, the Register, and that particulars of the terms and conditions upon which copies of these lists may be made available can be obtained on application to the office of the Council.

I am, Sir, yours faithfully,

MICHAEL HESELTINE,

Registrar, General Medical Council.

44, Hallam-street, Portland-place, London, W., Dec. 2nd.

CAUSES AND TREATMENT OF OBESITY

DR. H. W. HALES writes:—May I make some corrections of your summary of my remarks at last week's meeting of the Section of Medicine of the Royal Society of Medicine? You stated that I viewed obesity as a symptom of oxidation deficiency produced by tissue and intestinal poisons; I actually said "by the combined action of food toxins and intestinal poisons." Again, you said: "There were certain toxic principles in food, especially meat, of which *avenin* was an important example." *Avenin* should read *arginine*. As is well known, arginine is an amino-acid which, according to Edlbacher and Mertz, is present in a very high concentration in cancerous tissue. It has been shown that inoculated cancerous growths in animals are speeded up by the injection of arginine, but are retarded by thyroxine. (Cf. Gilroy's articles in *Biochemical Journal*, 1930-31.) This suggests a reason for the value of thyroid and potassium permanganate in many chronic conditions, especially those involving the liver or ductless glands. Cancer seems to be progressing rapidly in meat-eating countries, and so the question of arginine appears to be of increasing importance. (I am indebted to Mr. C. B. Voge, Ph.D., for my information on this subject.) You have quoted me as saying that "Hunger was analogous to the withdrawal symptoms felt by drug addicts." The context showed that hunger referred to the particular craving for food experienced at the beginning of a fast, and it should be differentiated from the irresistible hunger which arises at the successful completion of such treatment. Lastly, I said "colonic detoxication by lavage with potassium permanganate as originally described by Nott." I do not find that other solutions are of much value.

HOSPITAL EXTENSIONS AT STROUD.—The county public assistance committee, on Nov. 19th, approved a scheme to spend £28,000 in remodelling and extending the Stroud Public Assistance Institution. A hospital block with 109 beds, a laundry, a dining-room, and alterations in the nurses' quarters are included in the plans.

MEDICAL NEWS

University of Cambridge

On Nov. 30th the following degrees were conferred:—

M.D.—E. H. Willoughby Lyle and T. K. S. Lyle.
M.B., B.Chir.—C. L. Collins, J. S. Cookson, B. T. Thorne, and A. H. M. Siddons.
M.B.—F. H. Finlaison and H. B. Tipler.

The following have been appointed members of the committee for medical radiology and electrology for 1936: Dr. T. S. Hele, Dr. G. S. Graham-Smith, Dr. G. H. Orton, Dr. E. P. Cumberbatch, Prof. Sidney Russ, and Dr. Russell Reynolds.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

MASTERY OF MIDWIFERY
 Marion Bow, M. W. Ginsberg, Hilda Linford, H. T. Tate, and Elizabeth S. Walker.

Queen Alexandra's Hospital for Officers

Lord Melchett presided at the sixteenth annual reunion dinner of this hospital held at the Hotel Splendid on Nov. 29th, when nearly fifty of the former patients and members of the nursing staff were present. In proposing the health of the former patients, Lord Melchett sounded a note of hope and confidence, and in his reply, General T. A. Bigge expressed the appreciation of the officers for the devoted work of Mr. and Mrs. Herbert Paterson, the matron, nurses, and voluntary workers of the hospital.

Royal Free Hospital

On Nov. 28th the annual dinner of this hospital was held at the Savoy Hotel under the chairmanship of Dr. H. Haldin-Davis, who has lately resigned his position of dermatologist to the hospital and been elected to the consulting staff. In proposing the toast of the school and hospital he told the guests of some of the honours received during the past year. The Duke of York had consented to become president of the hospital; Dr. Chodak Gregory had been elected a Fellow of the Royal College of Physicians of London, being the second woman to be admitted to the fellowship; while Sir Alan Anderson had been elected M.P. for the City of London, and as a result had had to resign from the treasurership of the hospital though he was remaining on the council. Dr. Haldin-Davis referred to the generous provision which Lord Riddell, their late president, had made for the hospital in his will. Dr. D. C. Hare in an amusing speech proposed the health of the guests, who included Dr. Letitia Fairfield, Commander Stephen King-Hall, Sir Walter Moberly, Dr. Bentley Purchase, and Mr. and Mrs. F. W. Pethwick-Lawrence. Dr. Fairfield in reply spoke of the unique part which the voluntary hospitals played in the lives of the poor of London. If a rivalry existed between the L.C.C. as a hospital authority and the voluntary hospitals, it was a friendly and coöperative rivalry. Commander King-Hall who also replied related some incidents of the unorthodox but effective practice of medicine by amateurs in the Navy before admitting frankly his dissatisfaction with the tangible results of orthodox medicine. We live, he said, in a framework of time and space, but while we now voyage to the stratosphere in balloons and to the depths in submarines, our expectation of life had been only increased by a beggarly 15 years and the service for providing "spare parts" to our bodies was still inadequate. When time for eating and sleeping was deducted from our years of full activity he reckoned that we had but some 4261 working days at our disposal. Considering the enormous sums of money spent on research in other directions he felt that a grant of 20 million pounds to medical research would be proper; it would have great psychological value. Miss M. Rowland Jones proposed the health of the chairman. In dermatology, she said, it was easy to prescribe expensive lotions when what was needed was more soap and water and less food. But Dr. Haldin-Davis, like Elisha, did not hesitate to tell his patients to wash and be clean. The chairman in reply paid a tribute to Miss Widdows who had for many years acted with him as co-secretary for the dinner.

Voluntary Euthanasia

The inaugural public meeting of the Voluntary Euthanasia Legalisation Society will be held on Tuesday, Dec. 10th, at 8 p.m., in the Great Hall of the B.M.A. House, Tavistock-square. The chair will be taken by Lord Moynehan, president of the society, and the speakers include Mr. C. J. Bond, F.R.C.S., chairman of the executive committee, Dr. C. Killick Millard, hon. secretary, the Earl of Listowel, Lieut.-Colonel Sir Arnold Wilson, M.P., Miss Eleanor Rathbone, M.P., the Rev. Harold Anson, Master of the Temple, and the Rev. F. W. Norwood, D.D. The resolution to be presented at this meeting runs as follows: "That, in the interests of humanity, it is desirable that voluntary euthanasia should be legalised, subject to adequate safeguards, for persons who are suffering from incurable, fatal, and painful disease." Admission to the meeting is free and questions will be invited.

Pinsent-Darwin Studentship in Mental Pathology

Official notice is given that an election to the above studentship will be made in January, 1936. The studentship is of the annual value of not less than £225, and is tenable for three years. The student must engage in original research into any problem having a bearing on mental defects, diseases, or disorders, but may carry on educational or other work concurrently. Applications for appointment to the studentship should be sent before Jan. 1st to the secretary, Pinsent-Darwin Studentship, Psychological Laboratory, Cambridge. Applicants should state their age and qualifications and the general nature of the research that they wish to undertake. No testimonials are required, but applicants should give the names of not more than three referees.

Royal Surgical Aid Society

The 73rd annual meeting of this society will be held at the Mansion House, London, at 4 p.m. on Monday next, Dec. 9th, under the presidency of the Lord Mayor. The speakers will include Prof. G. Grey Turner, F.R.C.S., and Sir William Beveridge.

The Post-Certificate School

On Friday, Dec. 13th, a reunion will be held for friends and students of this school (77, Southampton-street, Camberwell, London, S.E.) to meet Dr. John Fairbairn. At 4 p.m. tea will be given at St. John's Home, Watson-street, Deptford, and at 5 p.m. Dr. Fairbairn will give an address at the school in Camberwell, his subject being Post Certificate Work.

Joint Tuberculosis Council

At the November meeting of the council it was decided to invite the Association of Thoracic Surgeons to appoint a representative. The chief business was the consideration of a report presented by Dr. J. B. McDougall on behalf of the Employment Committee dealing broadly with care and after-care schemes in this country and abroad. The circulation of this report was left to the British Legion Press. On behalf of the Institutions Committee Dr. F. J. C. Blackmore presented a note on tuberculosis institutions and chest hospitals. It was resolved that "This Council is of the opinion that the benefits of major surgery for both tuberculous and non-tuberculous conditions should be available to every patient in need of such treatment, and considers that steps should be taken by local authorities to provide facilities at tuberculosis institutions if adequate arrangements have not been, or cannot be, made at other institutions." A committee was appointed to consider and report to the next meeting on the standardisation of blood sedimentation tests. Dr. W. Brand gave an account of post-graduate courses held during the year. The course at the City of London Hospital had 22 participants, the study tour in Denmark (June 1st to 15th) 10 members. Dr. Peter Edwards had given six short intensive courses, and from Nov. 4th to 9th a course was held at the Brompton Hospital. A letter had been received from the College of Nursing asking for advice about precautions to prevent tuberculous infection among nurses. Dr. Esther Carling, Dr. Jane Walker, and Dr. James Watt were asked to report on this.

Royal Society of Medicine

The house and library of the society will be closed from Monday, Dec. 23rd, to Saturday, the 28th, inclusive.

Leeds School of Medicine

At the annual dinner of past and present students of this school, with Mr. E. R. Flint in the chair, Mr. C. H. Robinson, proposing The Staff, warned them that the students had no intention of specialising in each of the lecturers' special subjects. Responding, Mr. B. L. Jeaffreson spoke of the danger of surgery overshadowing medicine in the practice of the Infirmary; medicine pure and simple was just as important as surgery, if not more so. Dr. Stanley Sykes, proposing Past and Present Students, said that there were two stages in the life of the general practitioner. In the first, people said: "He seems a very nice doctor, but he is too young and inexperienced." In the second they said: "He is a very experienced doctor, but he is too old and out-of-date in his methods." There was no intermediate stage. In his response Mr. D. W. Currie defined medicine as "the art of amusing the patient while nature effects the cure."

Spahlinger Vaccine

A joint committee of the Medical Research Council and the Agricultural Research Council on Tuberculosis has issued in the form of a green paper (H.M. Stationery Office, 2d.) its observations on the experiment with Spahlinger vaccine in Northern Ireland (see THE LANCET, Oct. 19th, p. 892). The joint committee concludes that a case has been made out for further investigation, and that a thorough test should be made in this country, if Mr. Spahlinger is found willing to supply vaccine in sufficient quantity for the inoculation of a suitable series of animals. The committee urges however that, until the vaccine has been shown by further and extended experiments to be effective against natural as well as experimental methods of infection, its practical application should be deferred, and it deprecates the enforced general use of the vaccine until a thorough investigation has been made. The observations are signed by Dr. J. A. Arkwright, F.R.S. (chairman), Sir Merrik Burrell, Prof. J. B. Buxton, F.R.C.V.S., Prof. S. L. Cummins, M.D., Capt. S. R. Douglas, F.R.S., Mr. G. W. Dunkin, M.R.C.V.S. (joint secretary), Dr. A. Stanley Griffith, and Dr. N. F. Smith (joint secretary).

PARLIAMENT

NOTES ON CURRENT TOPICS**Opening of New Parliament**

THE first session of the new Parliament was opened on Tuesday, Dec. 3rd. Owing to the illness of Princess Victoria, who died subsequently, there was no Royal procession and the session was opened by Lords Commissioners, the King's Speech being read by the Lord Chancellor, Viscount Hailsham.

In the course of the Gracious Speech it was stated that the Government are convinced of the need for an early and substantial development of the educational services of the country. A Bill would be introduced to amend the law in England and Wales relating both to the age of compulsory school attendance and to assistance from public funds towards expenditure on voluntary school buildings. Action would be taken in coöperation with local authorities and others to increase the effectiveness of the other educational services. In particular, the improvement of the school medical arrangements, the extension of physical education, and the development of technical schools would receive the attention of the Government. The Government would continue to promote actively the development of the social services and to take vigorous measures to improve the health and physique of the nation. They would press forward the work of slum clearance in order to ensure that the programmes submitted by local authorities were carried out within the period contemplated, and they would encourage the active

administration of the Housing Acts of 1935 which enabled local authorities to make a direct attack on the evils of overcrowding. Careful consideration had been given by the Government to the organisation of the maternity services with a view to providing better care for women in childbirth and a Bill would be introduced for the provision by local authorities, in coöperation with voluntary associations, of an organised service of salaried midwives. The Government would continue to give close consideration to the further improvement of conditions in Scotland, and among measures to that end a Bill would be introduced providing for the raising of the school age.

Voluntary Hospitals (Paying Patients) Bill

In the House of Lords on Tuesday, Dec. 3rd, Lord LUKE presented the Voluntary Hospitals (Paying Patients) Bill, which was read a first time.

Debate on the Address

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Certifying Surgeons under the Factory and Workshop Acts: Dr. R. F. SMITH (Melbourne District, Leicester); Dr.

W. R. C. CAMPBELL (Helensburgh District, Dumbarton).

Royal Society of Medicine

The house and library of the society will be closed from Monday, Dec. 23rd, to Saturday, the 28th, inclusive.

Leeds School of Medicine

At the annual dinner of past and present students of this school, with Mr. E. R. Flint in the chair, Mr. C. H. Robinson, proposing The Staff, warned them that the students had no intention of specialising in each of the lecturers' special subjects. Responding, Mr. B. L. Jeaffreson spoke of the danger of surgery overshadowing medicine in the practice of the Infirmary; medicine pure and simple was just as important as surgery, if not more so. Dr. Stanley Sykes, proposing Past and Present Students, said that there were two stages in the life of the general practitioner. In the first, people said: "He seems a very nice doctor, but he is too young and inexperienced." In the second they said: "He is a very experienced doctor, but he is too old and out-of-date in his methods." There was no intermediate stage. In his response Mr. D. W. Currie defined medicine as "the art of amusing the patient while nature effects the cure."

Spahlinger Vaccine

A joint committee of the Medical Research Council and the Agricultural Research Council on Tuberculosis has issued in the form of a green paper (H.M. Stationery Office, 2d.) its observations on the experiment with Spahlinger vaccine in Northern Ireland (see THE LANCET, Oct. 19th, p. 892). The joint committee concludes that a case has been made out for further investigation, and that a thorough test should be made in this country, if Mr. Spahlinger is found willing to supply vaccine in sufficient quantity for the inoculation of a suitable series of animals. The committee urges however that, until the vaccine has been shown by further and extended experiments to be effective against natural as well as experimental methods of infection, its practical application should be deferred, and it deprecates the enforced general use of the vaccine until a thorough investigation has been made. The observations are signed by Dr. J. A. Arkwright, F.R.S. (chairman), Sir Merrick Burrell, Prof. J. B. Buxton, F.R.C.V.S., Prof. S. L. Cummins, M.D., Capt. S. R. Douglas, F.R.S., Mr. G. W. Dunkin, M.R.C.V.S. (joint secretary), Dr. A. Stanley Griffith, and Dr. N. F. Smith (joint secretary).

PARLIAMENT

NOTES ON CURRENT TOPICS

Opening of New Parliament

THE first session of the new Parliament was opened on Tuesday, Dec. 3rd. Owing to the illness of Princess Victoria, who died subsequently, there was no Royal procession and the session was opened by Lords Commissioners, the King's Speech being read by the Lord Chancellor, Viscount Hailsham.

In the course of the Gracious Speech it was stated that the Government are convinced of the need for an early and substantial development of the educational services of the country. A Bill would be introduced to amend the law in England and Wales relating both to the age of compulsory school attendance and to assistance from public funds towards expenditure on voluntary school buildings. Action would be taken in co-operation with local authorities and others to increase the effectiveness of the other educational services. In particular, the improvement of the school medical arrangements, the extension of physical education, and the development of technical schools would receive the attention of the Government. The Government would continue to promote actively the development of the social services and to take vigorous measures to improve the health and physique of the nation. They would press forward the work of slum clearance in order to ensure that the programmes submitted by local authorities were carried out within the period contemplated, and they would encourage the active

administration of the Housing Acts of 1935 which enabled local authorities to make a direct attack on the evils of overcrowding. Careful consideration had been given by the Government to the organisation of the maternity services with a view to providing better care for women in childbirth and a Bill would be introduced for the provision by local authorities, in co-operation with voluntary associations, of an organised service of salaried midwives. The Government would continue to give close consideration to the further improvement of conditions in Scotland, and among measures to that end a Bill would be introduced providing for the raising of the school age.

Voluntary Hospitals (Paying Patients) Bill

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Debate on the Address

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NOTES, COMMENTS, AND ABSTRACTS

DR. JOHN HALL: SHAKESPEARE'S
SON-IN-LAW¹

No more fitting place could, I think, have been chosen for this commemoration of the 300th anniversary of Dr. Hall's death than this building—the home of his daughter Elizabeth and her husband Tom Nash—the windows of which look out on to the now vacant site of New Place in which the doctor lived and died. The documents and other objects which have been brought together for this occasion have been obtained from various sources—the records have come from the Stratford-upon-Avon Corporation archives, the collections of the Birthplace Trust, and the parish chest. The contemporary drug jars, mortars, and other reminders of the apothecary's art have been kindly lent by Dr. D. S. Murray and Mr. J. Whitmore Peck, and the very valuable case of early seventeenth century surgical instruments is a loan from the Royal College of Physicians of London. With regard to the documents it is remarkable that after such a lapse of time it should be possible to assemble such a collection, illustrating as it does the life of one of Stratford's most prominent townsmen—prominent not only for his close personal connexion with Shakespeare, and his influence on the poet's later work—but also on account of his own special qualities and his great renown in the town and neighbourhood. These records present all the dominant phases of the doctor's career as a townsman of Stratford-upon-Avon. We find there evidence of his shrewd and businesslike concern in the estate bequeathed to his wife by Shakespeare; his kindly nature in the preservation of the home of his wife's sister, Judith Quiney, when threatened with the loss of it through her husband's bibulous excesses; his earnest Puritanism in the discharge of his duties as a churchwarden for the borough; his munificence to the parish church; his service as a member of the town council; his efforts and failure to reconcile his work as a physician with the demands made upon his time by an inconsiderate corporation, and his subsequent expulsion from that body; and his championship of the vicar and litigation on his behalf against the town council; while from his printed case-book we can follow him up and down the county—and far outside it—treating rich and poor alike—"even such as hated him for his religion," recording his successful cures with many an expression of devout thanks for heavenly aid.

John Hall was born in 1576, the son of William Hall, a Worcestershire doctor, whom we find settled at Acton, Middlesex, at the time of his death in 1607. From the terms of his will he appears as an astrologist and alchemist. John Hall graduated B.A. at Oxford in 1595, three years later became M.A., and from Oxford he went to the continent, as many medical students did, and obtained a degree, probably in France. The first reference to his presence in Stratford is the entry in the parish register on June 5th, 1607, of his marriage to Shakespeare's elder daughter Susannah, she being then 24, he 31 years of age. In Stratford he soon acquired a large and fashionable practice, extending into and beyond the neighbouring shires. Catholics were among his patients, notwithstanding his Puritan views, in which, apparently, he had the full sympathy of his wife. Tradition connects him with the house in Old Town called Hall's Croft, from which he removed to New Place on Shakespeare's death in 1616.

Shakespeare's description of the lord Cerimon in *Pericles* might be a word-portrait of Dr. Hall.

Gentlemen roused from their beds by the storm, find Cerimon up and about at dawn, ready for patients that the tempest might bring, dispatching his man to the apothecary. He says in reply to their astonishment:

'Tis known I ever
Have studied phisic, through which secret art
By turning o'er authorities, I have
Together with my practice, made familiar
To me and to my aid the blest infusions
That dwell in vegetives, in metals, stones;
And I can speak of the disturbances
That Nature works, and of her cures; which doth give me
A more content in course of true delight
Than to be thirsty after tottering honour
Or tie my treasure up in silken bags
To please the fool and Death (III., ii., 31-42).

The lines that follow might be a prophesy of Hall's coming reputation:

Your honour has through Ephesus poured forth
Your charity, and hundreds call themselves
Your creatures who by you have been restored:
And not your knowledge, your personal pain, but even
Your purse still open, hath built Lord Cerimon
Such strong renown as Time shall never end (43-8).

I will not discuss at length the extent of Shakespeare's knowledge of medicine.

Dr. John Hall, with his wife and daughter Elizabeth, 8 years old, if not already in residence at New Place, came there from Old Town on the poet's death in 1616. The Stratford Corporation, eager to have him as a member, elected him a Burgess on March 14th, 1617. He pleaded his professional duties and was excused. He was an active churchman and Puritan, and a devoted admirer of the eloquent, headstrong vicar, Thomas Wilson. In 1622 he was again elected a Burgess and again excused. His practice had grown very considerably and he rode, with his surgeon's box behind him, so far afield as Northampton, Worcester, and Ludlow. His patients included the Earl of Warwick, the Earl and Countess of Northampton, Lady Beaufoy ("godly, honest, being of a noble extract, healthful till the age of 28, which was 1617 July 1"), Lady Rouse, Mistress Mary Talbot ("a catholic, fair", "... such as hated him for his religion often made use of him"), Lady Puckering, Lady Browne of Radford, Lady Smith ("Roman Catholic, cruelly afflicted with wind"). Lady Dickenson ("fair, pious, chaste, vexed with pain of the head"), Lady Underhill and other of her family, Sheldons, Throgmortons, Rainsfords, Master Drayton ("an excellent poet, labouring of a tertian") and many others of note. Of his wife and daughter, he writes (in Latin): "Mistress Hall of Stratford, my wife, being miserably tormented with the colic" ... "was troubled with the scurvy, accompanied with pains of the loins, melancholy etc. ... I freed her from pain Feb. 9, 1630/1." Of their daughter, Shakespeare's grand-daughter, he records: "Elizabeth Hall my only daughter, was vexed with *tortura oris* or the convulsion of the mouth and was happily cured ... 5 Jan. 1624/5." In the beginning of April she went to London (probably to participate with her father in functions consequent on the death of King James on March 24th, and the accession of Charles I.), and returning homewards the 22nd of the said month "she took cold and fell into the said distemper on the contrary side of the face, and although grievously afflicted with it, yet by the blessing of God she was cured in sixteen days as followeth ... her neck was fomented with aqua vitae, in which was infused nutmegs, cinnamon, cloves, pepper; she ate nutmegs often. In the same year May the 24th, she was afflicted with an erratic fever: sometimes she was hot, bye and bye sweating, again cold, all in the space of half an hour, and thus she was vexed oft in a day. [Then he gives the prescription and adds] Thus was she delivered from death and deadly disease and was well for many years, to God be praise."

On March 1st, 1624-25, Dr. Hall assigned to the corporation for £400 the lease, which had still eleven

¹ The substance of an address delivered in the New Place Museum, Stratford-upon-Avon, on Monday, Nov. 25th, to mark the tercentenary of Dr. John Hall, Shakespeare's son-in-law. The address was delivered by Mr. FREDERICK C. WELLS, F.S.A., secretary and librarian to the Shakespeare's Birthplace Trust, and was illustrated by original records and other objects bearing on the life of Dr. John Hall.

years to run, of the tithes of Old Stratford, Welcombe, and Bishopston, which Shakespeare had purchased for £440 in 1605, and bequeathed to his daughter and her husband. In February, 1626, he was fined £10 for refusing a knighthood on the Coronation of King Charles I. On April 22nd in that year his daughter Elizabeth was married to Thomas Nash of Lincoln's Inn, son of Anthony Nash of Welcombe, to whom her grandfather bequeathed a memorial ring. She was just over 17, he just under 33 years of age. In 1628-29 Dr. Hall, the ardent supporter of the vicar, Thomas Wilson, served as a churchwarden for the parish. With his fellow-wardens, Anthony Smith and George Barton, he fulfilled his duties energetically, presenting parishioners for "loitering forth of church at sermon-time," "sleeping in the belfry with a hat on upon the Sabbath," "keeping drinking in a house on the Sabbath," and "in the company of an excommunicated person," keeping "naughty company," "wearing a hat in church," and being a "common romler," "being abroad seen by the Constable at sermon-time," "for late coming to Church," and "having no employment but laziness," "using beastly behaviour," "calling a woman witch," and "being a common swearer and blasphemer" or "drunkard." Much against his will Dr. Hall was elected a Burgess in May, 1632. Twice before he had successfully made excuse, but now he had to yield, partly to answer for his participation with the vicar in suits against the corporation. His membership lasted but sixteen months, and his presence when he did attend the council meetings was, to say the least, disturbing. The minutes of June 30th, 1632, record that he had neglected to attend and take his oath, although warned by both the chamberlains and the sergeants. He was warned again for July 6th, but in response to a pleading and indignant letter from a patient demanding his attendance he again made default.

[This letter, which was exhibited at the meeting, set forth in an urgent way the claims of professional over public duty.]

Hall had to contend with the family difficulties of his brother-in-law, Thomas Quynney of The Cage Tavern, now the Judith Quynney Café. Quynney, who was a vintner, fell, like Bardolf, a victim to the temptations of his calling. He was fined for absence from corporation meetings, for swearing, for suffering tipping in his house, and was passed over for promotion to aldermanic rank. On March 13th, 1633, Dr. Hall, his son-in-law Thomas Nash, and Richard Watts, who had married Quynney's sister Mary, took over the lease of the Cage in trust for his wife and children. [This document was also exhibited.]

On one occasion Hall was called upon to answer and submit himself to the corporation for abusive speeches against the bailiff, Richard Castle, known locally as "Shake-Elbows." Influence with Wilson, the vicar, and the Bishop had enabled the doctor to change his pew in the church from one near the pulpit on the south of the nave (that hitherto allotted to New Place and no doubt occupied by Shakespeare and his family) to another on the north side of the nave, at the upper end, "enjoyed time out of mind" by the aldermen and their wives. The bailiff and his brethren of the council not unnaturally resented their exchange. They objected also to Hall's denunciation of them for a breach of contract with the vicar. This was one of Dr. Hall's last attendances and doubtless a stormy one. On Oct. 9th, by 19 votes to 3, he was expelled from the council for "wilful breach of orders, sundry other misdemeanours, and continual disturbances." A Sunday or two later a scuffle occurred for possession of the aldermanic pew which led to the vicar holding a special court at New Place. The breach between vicar and corporation widened. He and Dr. Hall filed a petition in Chancery for the increase of the stipends of both vicar and schoolmaster, "according to the intent of the Charters." Notwithstanding the doctor's sale to the corporation of his lease of the tithes "for

less money than the same was worth by a hundred pounds at least" to maintain the vicar's salary to £60, they had reduced it, and for about the space of ten years last past, they had "utterly suppressed, omitted & neglected the payment of £20 per annum to the Schoolmaster." They charged the corporation, moreover, with "feasting and private use of the revenues." Interesting as they are, however, the details of the quarrel are too long to recapitulate here. Dr. Nathaniel Brent, the Vicar's General of the Diocese, opened an inquiry at Stratford. He awarded Dr. Hall his new pew "on the north side of the nave at the upper end" if he decided within a month to take it. In his evidence Dr. Hall states that he and his son-in-law, Thomas Nash, "did paye and contribute deeply towards the repayres of the sayd Church, and that he the sayd Mr. Hall had bene a benefactor and bestowed a new pulpit at his owne charge, and alsoe that the seate was assigned unto him by the Lord Bushopp of the diocese by an instrument vnder his episcopall seale wch, he then produced." [This document was also exhibited.]

The vicar was suspended for three months. Hall did not long survive his friend's suspension. He died suddenly on Nov. 25th within a few days of his neighbours, Henry Norman and Richard Walford. They may have been carried off by the same malady—for which perhaps he attended his fellow victims with fatal consequence. The burial entry in the parish register describes him as "Medicus Peritissimus." On his grave, near to Shakespeare's, were inscribed the lines—being translated—"Here lies Hall, very renowned for his medical skill, awaiting the joys of the Kingdom of God. Worthy was he, for his merits, to outdo Nestor in years, but on earth a like Day lays hands on all."

Mr. Wellstood closed his interesting lecture by a reference to the case-books and confidential papers, some no doubt inherited from Shakespeare, which were bequeathed by Hall in his will to his son-in-law Tom Nash. Hall's manuscript books were bought by one Dr. James Cook, and a translation of selected cases was published in 1657 and again in 1679 and 1683. These volumes were exhibited with photographs of certain of Dr. Hall's manuscript pages now in the British Museum. Hall's familiarity in the making up of his prescriptions was indicated by the number of his drug jars which were exhibited. The surgical instruments exhibited were in use in Hall's time and represent the armamentarium of a doctor of the Stuart period.* Of these, Mr. Wellstood said: They were made probably about 1631, and were presented to the College of Physicians of London in 1635 by Dr. Thomas Prujean. This collection, consisting originally of over 100 instruments, must have been of considerable value even at that period and the donor himself described it as "a precious storehouse of the art of the chirurgien." The donor, Dr. Thomas Prujean, was the son of Sir Francis Prujean, and was admitted a candidate for the Licentiate of the College of Physicians on April 4th, 1653, by his father, who was then President, and in commemoration of that event presented the case of instruments to the College on the same date. He was admitted as a Fellow in October, 1657, and died in October, 1662. Sir Francis Prujean, the father, was President of the College from 1650 to 1655, and is referred to in the diaries of both Pepys and Evelyn.

NEW PREPARATIONS

MELTIS "SIONON" CHOCOLATE.—Sionon is the trade name for D-sorbitol, a polyhedric alcohol closely related to the hexoses. In THE LANCET just two years ago Payne, Lawrence, and McCance stated their conclusion that while the quantity taken daily should not exceed 50 g. in divided doses (in view of the possibility of intestinal irritation) "Sionon can safely be used as a sweetening agent

* A full description of the surgical instruments exhibited was given in the *Medical Press and Circular* of Oct. 26th, 1927, by Mr. C. J. S. Thompson, hon. curator, historical section, museum of the Royal College of Surgeons of England.

for diabetics as it does not enter directly into carbohydrate metabolism." Acting on this favourable verdict Messrs. Meltis Ltd. (Keetons-road, London, S.E. 16) have produced a chocolate sweetened with sionon which is recommended for the use of diabetics and others whose sugar intake is restricted. It is sold in cartons holding forty napolitains, each of which is said to contain approximately: sionon, 1.0 gramme; milk-sugar and other carbohydrate, 1.0 g.; protein, 0.5 g.; and fat, 2.0 g. Judged as a sweetmeat the chocolate is of excellent quality, and to many palates the fact that it is not very sweet will seem an advantage. The carton bears the statement: "For diabetics—safe, palatable, nutritious."

CEROCOL.—Cerium oxalate has long been used for the relief of vomiting—especially the vomiting of pregnancy. As it is all but insoluble in water its action is generally held to be mechanical, resembling that of bismuth salts. Cerocol (distributed by Messrs. Coates and Cooper Ltd., 94, Clerkenwell-road, London, E.C. 1) is described as "a colloid-soluble form of cerium oxalate" which is "readily absorbed," and is held to have decided advantages over the form ordinarily prescribed. Prepared in small tablets, each containing 0.05 gramme of colloidal cerium oxalate, it is almost tasteless, and is said to be non-poisonous even in multiple doses. It is recommended, among other conditions, for vomiting from all causes, including sea and train sickness, and for nausea.

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Mental Hospital.—Sen. Asst. Physician.

Ashford Hospital, Kent.—Res. M.O. £150.

Battersea General Hospital, Battersea Park, S.W.—H.S. Also H.P. At rate of £130 and £120 respectively.

Benenden, Kent, National Sanatorium.—Jun. H.P. At rate of £150.

Birmingham Royal Cripples Hospital.—Res. H.S. At rate of £200.

Bradford, Royal Eye and Ear Hospital.—H.S. £160.

Brighton, Royal Alexandra Hospital for Sick Children.—H.P. £120.

Brighton, Sanatorium and Infectious Disease Hospital.—Jun. Res. M.O. At rate of £250.

Brighton, Sussex Eye Hospital, Eastern-road.—H.S. At rate of £150.

Bristol General Hospital.—Res. Surg. O. and Reg. £200. Also two H.P.'s, three H.S.'s, Res. Obstet. O., H.S. to Spec. Depts., also Cas. H.S. Each at rate of £80.

Chelsea Hospital for Women, Arthur-street, S.W.—Surgeon.

Chesterfield and North Derbyshire Royal Hospital.—H.S. to Ear, Nose, and Throat and Eye Depts. At rate of £150.

Children's Hospital, Hampstead, N.W.—Res. M.O. At rate of £150.

China, Mission Hospital.—Two Medical Men.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Res. M.O. £250. Also H.P. At rate of £100.

Coventry and Warwickshire Hospital.—Res. H.S. £125.

Denbigh County.—Deputy County M.O.H. and School M.O. £760.

Derbyshire Royal Infirmary.—Ophth. H.S. and Anaesthetist. £150.

Doncaster Royal Infirmary.—H.P. At rate of £175.

Eastern Hospital, Homerton-rose, E.—Med. Supt. £1100.

East Grinstead and District New Hospital.—Hon. Consultants to Special Depts.

Evelina Hospital for Sick Children, Southwark, S.E.—H.S. £120.

Exminster, Devon Mental Hospital.—Jun. Asst. M.O. and Pathologist. £350.

Glasgow, Lighthouse Joint Hospital, Shettleston.—Res. Physician. £350.

Hampshire County Council.—Asst. Tuberc. Officer. £700.

Hastings, Royal East Sussex Hospital.—Jun. H.S. At rate of £150.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Surg. Reg. £100.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. H.P. Also Res. H.S. Each at rate of £100.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100.

Huddersfield Royal Infirmary.—Res. Surg. O. £225-£250.

Ilford, West Ham Mental Hospital, Goodmayes.—Jun. Asst. M.O. £350.

Sanatorium.—Sen. Asst. Res. M.O. £125.

Consumption and Diseases of the Chest.—Asst. M.O. and Pathologist. £150.

Hospital, Great Ormond-street, W.C.—Asst. Physician for Diseases of Women, also Hon. Asst. Physician.

London Hospital, E.—Hon. Asst. Anaesthetist.

London Lock Hospital, 253, Harrow-road, W.—Res. M.O. for Male Depts. At rate of £175.

Manchester, Ancoats Hospital.—Asst. Pathologist. £300.

Manchester, Duchess of York Hospital for Babies.—Orthopaedic Registrar.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Manchester Royal Infirmary.—Res. M.O. £200.

Manchester, St. Mary's Hospitals.—H.S.'s for Special Hospitals. Each at rate of £50.

Marie Curie Hospital, 2, Fitzjohn's-avenue, N.W.—Res. M.O. At rate of £100.

Miller General Hospital, Greenwich-road, S.E.—Refractionist. 52 guineas.

National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Two H.P.'s. Each £150. Also Visiting M.O. for Convalescent Home.

National Temperance Hospital, Hampstead-road, N.W.—Cas. O. At rate of £120.

Nottingham General Hospital.—H.S. At rate of £150.

Oldham Royal Infirmary.—Cas. O. and H.S. and Physician. At rate of £175.

Oswestry, Robert Jones and Agnes Hunt Orthopaedic Hospital.—Res. Surg. O. £350.

Penshurst, Cassel Hospital for Functional Nervous Disorders, Swaylands.—Asst. Physician. £750.

St. Mary's Hospital, Marylebone-road, N.W.—H.P. £100.

Radium Institute, Riding House-street, W.—Asst. M.O. At rate of £250. Also H.S. At rate of £150.

Redhill, Reigate Institution, St. John's.—Res. Asst. M.O. At rate of £250.

Romford, Oldchurch Hospital.—Asst. Res. Surgeon. £500.

Royal Masonic Hospital, Ravenscourt Park, W.—Res. M.O. £300.

Royal Northern Hospital, Holloway, N.—H.S. At rate of £70. Also Hon. Radiologist.

St. Bartholomew's Hospital, E.C.—Physician.

St. John's Hospital, Lewisham, S.E.—H.S. At rate of £100.

St. Mary's Hospital, W.—Jun. Asst. Radiologist. £75.

St. Peter's Hospital for Stone, &c., Henrietta-street, W.C.—Clin. Asst.

Salford Royal Hospital.—H.S. At rate of £125.

Salisbury General Infirmary.—H.P. At rate of £125.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—Radiologist.

Sheffield Royal Infirmary.—Clin. Asst. to Surgical Dept. At rate of £300.

Staffordshire General Infirmary.—H.P. and Cas. O. At rate of £150.

Stockport Infirmary.—H.P. £150.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—Second H.P. At rate of £150.

Sunderland Royal Infirmary.—H.S. £120.

Surrey County Council.—Asst. M.O. £600.

Swansea General and Eye Hospital.—Res. Anaesthetist. £150.

Walsall County Borough.—Asst. M.O. £600.

West Bromwich and District General Hospital.—H.S. At rate of £200.

West London Hospital, Hammersmith-road, W.—Med. Reg. £250. Also H.P. and two H.S.'s. Each at rate of £100.

Westminster Hospital, Broad Sanctuary, S.W.—Obstet. Surgeon.

Weston-super-Mare General Hospital.—Res. H.S. £150.

Wickford, Essex, Runwell Hospital.—Deputy Med. Supt. £650.

Willersden General Hospital, Harlesden-road, N.W.—Res. Cas. O. At rate of £100. Also Hon. Clin. Assts. to Out-patient Depts.

Winchester, Royal Hampshire County Hospital.—Res. Surg. O. Also H.P. At rate of £200 and £125 respectively.

Windsor, King Edward VII. Hospital.—Three H.S.'s. Each at rate of £100.

Wolverhampton, New Cross Hospital and Institution.—Asst. Deputy M.O. £350.

Wolverhampton Royal Hospital.—H.S.'s. Each at rate of £100.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Chorley (Lancashire) and Abergavenny (Monmouth).

Births, Marriages, and Deaths

BIRTHS

CATER.—On Nov. 25th, the wife of Donald Cater, M.B. Camb., of the Lester Chinese Hospital, Shanghai, of a daughter.

MILBANK.—On Nov. 25th, at Bickley, the wife of Dr. R. J. Milbank, of a son.

MARRIAGES

MANSIE—KIRKPATRICK.—On Nov. 29th, at Belhaven Church, Glasgow, James Walker Mansie, M.R.C.S. Eng., L.D.S. R.C.S. Eng., of Putney, to Catherine Enid, second daughter of Mr. and Mrs. Duncan T. Kirkpatrick, of Glasgow.

PENNINGTON—COBB.—On Nov. 28th, at St. Paul's Church, Portman-square, London, Drury Pennington, M.B. Camb., to Ethel Margaret Cobb.

DEATHS

BOND.—On Dec. 2nd, suddenly, in Cheltenham, Lt.-Col. Richard Pratt Bond, R.A.M.C. ret'd., of Wood-ide, Copthorne, Sussex.

HATCH.—On Nov. 27th, at Cheltenham, Lieut.-Colonel William Keith Hatch, M.B. Aberd., F.R.C.S. Eng., Indian Medical Service (ret'd.).

WHITE.—On Nov. 28th, at Shrewsbury, Ernest William White, Lieutenant-Colonel, C.B.E., M.B. Lond., Emeritus Professor of Psychological Medicine, King's College, London.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

ADDRESSES AND ORIGINAL ARTICLES

THE USE OF GONADOTROPIC HORMONES IN THE TREATMENT OF IMPERFECTLY MIGRATED TESTES

BY A. W. SPENCE, M.D. Camb., M.R.C.P. Lond.

FIRST ASSISTANT, MEDICAL UNIT, ST. BARTHOLOMEW'S
HOSPITAL; AND

E. F. SCOWEN, M.D., M.R.C.P. Lond.

SECOND ASSISTANT

In a previous communication¹ we reported results obtained in the treatment of 11 patients with imperfectly migrated testes by means of the gonadotropic hormones contained in the urine of pregnant women. We have now followed these patients for a fairly long period and are able to state our results in a total of 33 cases treated by this method. Our findings are such that we think hormone therapy deserves trial before surgical measures are undertaken.

EXPERIMENTAL STUDIES

The experimental work of Evans and his associates,^{2,3} Smith and Engle,⁴ Aschheim,⁵ and many others has shown that a gonad-stimulating principle is present in the anterior lobe of the pituitary, and that it controls the activity of the ovaries and testes. The evidence suggests that the hormone consists of two factors—one which brings about maturation, and one which causes luteinisation of the ovarian follicles. According to Smith,⁶ and Evans,⁷ the follicle-stimulating hormone is gametokinetic in that it stimulates both ova and the male germ cells, whereas the luteinising hormone acts principally on the connective tissue derivatives—the thecal cells of the ovaries and the interstitial cells of the testes. Large amounts of a gonadotropic principle, similar in action to that produced by the pituitary, were found by Aschheim and Zondek⁸ in the urine of pregnant women, and their pregnancy test depends on its presence. The effect produced by pregnancy urine extracts in the female is predominantly one of luteinisation and in the male of hypertrophy of the interstitial tissue of the testes. Collip and his collaborators⁹ do not consider that pregnancy urine extracts stimulate the seminiferous epithelium, but Smith and Leonard¹⁰ and Evans and his associates⁷ state that they induce spermatogenesis, a finding which is supported by the results obtained by Brosius¹¹ in the treatment of azoospermia by pregnancy urine extracts. The researches of Engle¹² have further shown that in immature monkeys, in which the testes are normally situated at the upper end of the inguinal canals, injections of extracts of anterior pituitary or of pregnancy urine bring about descent of the testes into the scrotum by the fourteenth day.

Clinical Findings

Of the 33 patients with imperfectly migrated testes treated with pregnancy urine extract in the present work, in 12 the maldescent was bilateral, in 4 unilateral with the other testis situated high in the neck of the scrotum, and in 15 unilateral with the other testis situated low in the scrotum, while in 2 the testes were situated high in the scrotum and were easily retracted. The ages of the patients ranged from 4 to 26 years, the majority being 11 to 14 years old.

The examination of the position of the testes was made with the patients standing up to avoid any retraction of a normally situated organ. Care was also taken to note the degree of mobility of the testis and whether it could be pushed through the external ring into the neck of the scrotum. The preparation of gonadotropic hormones used was Pregnyl, usually given in doses of 500 rat units* intramuscularly into the deltoid twice weekly. The administration of smaller doses with shorter intervals between each dose—e.g., five times per week—would probably be more efficacious, but in our experience this was impracticable in the treatment of these patients, who were necessarily out-patients.

A summary of the clinical findings and of the results of treatment is set out later, case by case, and summarised in Table I. In 6 of the 12 bilatera

TABLE I

Summarising the Results Obtained in the Hormone Treatment of Patients with Imperfectly Migrated Testes

BILATERAL CASES		
Descent of both testes.	Descent of one testis.	Failures.
Case 1 in 14½ mths.	Case 7 in 9 mths.	Case 11 after 7 mths.
" 2 " 10 "	" 8 " 5 "	" 12 " 9 "
" 3 " 3 weeks.	" 9 " 7 "	
" 4 " 5 mths.	" 10 " 5 "	
" 5 " 1 mth.		
" 6 " 2 mths.		
UNILATERAL CASES		
Descent of testis.	Failures.	
Case 13 in 2 weeks.	Case 16 after 7 months.	
" 14 " 5 months.	" 25 " 8 "	
" 15 " 2 "	" 26 " 9½ "	
" 17 " 6 "	" 27 " 7 "	
" 18 " 6 weeks.	" 28 " 7 "	
" 19 " 2 "	" 29 " 5 "	
" 20 " 12 months.	" 30 " 5 "	
" 21 " 4 "	" 31 " 5 "	
" 22 " 5½ "		
" 23 " 2 "		
" 24 " 6 weeks.		

CASES WITH TESTES IN UPPER SCROTUM

Descent of testis.
Case 32 in 2½ months.
" 33 " 3 "

cases, both testes descended into the scrotum within a period varying from 3 weeks to 14½ months.

Case 3 was that of a boy, aged 12, with Fröhlich's syndrome associated with bilaterally undescended testes; descent was brought about in 3 weeks, but the injections which were continued for several months had little or no effect on his general condition.

Case 1 was a bilateral cryptorchid aged 11, neither testis being palpable while he was under preliminary observation in the ward. At the end of 5 weeks' treatment the right testis was in the scrotum, and the left testis was in the scrotum at the end of 9 weeks. The scrotum, however, which was very small and retracted, remained so for many months, and the testes varied in position in spite of continued treatment with gonadotropic hormone. In view of the demonstration by Burrows¹⁴ that in mice the administration of oestrin produces inguinal hernia and relaxation of the muscle layers in this region, he was treated in addition with oestrin (Menformon) in doses of 2500 units intramuscularly twice weekly. The use of oestrin was continued for 2 months, but little if any effect was observed. It has been shown by Selye, Collip, and Thomson¹⁵ that after prolonged administration of gonadotropic hormone to virgin female rats the animals become insensitive to the stimulus, and that in spite of continued treatment the initial hypertrophy of the ovaries disappears and may even be replaced by atrophy. As the patient had received 9 months' treatment with gonado-

* A Janssen-Loefer rat unit of gonadotropic hormone is the least amount which will provoke oestrus in half of the animals injected with all necessary precautions.¹³

tropic hormone, it was possible that he had entered into a refractory phase. Therapy was therefore discontinued for 3 months. At the end of this time treatment with gonadotropic hormone was resumed for 2½ months, when the scrotum became quite lax and the testes remained low in the scrotum. At the present time, 2 months after cessation of treatment, the testes remain low in a normal scrotum.

In 4 of the bilateral cases descent of one testicle occurred after treatment for 5-9 months. In the remaining 2 bilateral cases descent has not been brought about after treatment for 7-9 months.

Of the 4 unilateral cases in whom the scrotal testis was situated in the upper scrotum, in 3 both testes were low in the scrotum at the end of 2 weeks, 2 months, and 5 months respectively. In the remaining case at the end of 7 months the scrotal testis was low in the scrotum, but the position of the inguinal testis remained unchanged. In the unilateral cases with the scrotal testis low in the scrotum, 8 were successful after 2 weeks' to 12 months' treatment and 7 unsuccessful after treatment for 5 to 9½ months. In the 2 cases in which the testis was situated in the upper scrotum and frequent retraction troubled the patient, the testis assumed a position low in the scrotum after 2½ and 3 months of treatment and retraction no longer occurred.

Thus in half the bilateral cases both testes descended, in one-third one descended, and in one-sixth descent has not yet taken place. Of the 19 unilateral cases a successful descent was brought about in 11 (58 per cent.). Of the total 33 cases there have been 10 failures (30 per cent.).

We have been able to follow up the early cases after cessation of treatment. It is our custom to ask patients to present themselves at hospital every one, two, or three months after they have discontinued treatment. In 9 out of 11 such cases (3 bilateral and 6 unilateral) the testes are still in the scrotum 1-11 months after treatment was stopped. In 1 bilateral case one testis has retracted into the inguinal canal after 1 month without treatment, and in 1 unilateral case the position of the testis varies 10 months after treatment (Table II.).

TABLE II

Summarising the Follow-up of 11 Cases after Cessation of Treatment

TESTES REMAINED IN SCROTUM			
Case 1 (bilateral)	} after cessation of treatment for	2 months.	
" 4 "		6 "	
" 5 "		4 "	
" 14 (unilateral)		5 "	
" 15 "		1 month.	
" 17 "		3 months.	
" 19 "		11 "	
" 21 "		1 month.	
" 23 "		7 months.	
RETRACTION INTO INGUINAL CANAL			
Case 2 (bilateral) after cessation of treatment for 1 month (retraction of one testis).			
" 18 (unilateral) after cessation of treatment for 10 months (position varies).			

COMPLICATIONS OF TREATMENT

After the first, and sometimes also after the second injection, in a considerable number of cases there has been a local reaction consisting of pain, redness, and swelling round the site of the injection. This has even been severe enough to prevent the patient from using his arm next day, but as a rule it has disappeared by the second or third day. Reactions were not observed after subsequent injections, provided that the same site was used. If a different site was chosen, it was not unusual to produce some local reaction. Occasionally a slight reaction was observed locally

TABLE III.—CASES TREATED

Case.	Age in years and initial condition.	Result.
1	11. Bilateral. Testes not palpable. Scrotum retracted.	After 5 wks. right testis low in scrotum; after 9 wks. left low in scrotum. Positions later varied in spite of continued treatment. After 6 mths. menformon 2500 units given in addition intramuscularly twice weekly for 2 mths. Treatment with pregnyl continued for 9 mths. No change in condition. Treatment stopped for 3 mths.; pregnyl injections then resumed for 2½ mths. At the end of this period both testes low in scrotum and scrotum lax. After 2 mths. without treatment, testes low in scrotum and scrotum normal.
2	10½. Bilateral; 1 year before, right orchidopexy. Right testis now at external ring; left in inguinal canal and cannot be pushed into scrotum.	After 4 mths. right testis low in scrotum, left at external ring and can be pushed into scrotum. Later position of right varied. After 10 mths., both low in scrotum. After 11 mths., treatment stopped; 1 mth. later right testis in mid-scrotum; left in inguinal canal. According to patient, position varies, but both testes usually in scrotum.
3	12. Fröhlich's syndrome with bilaterally undescended testes.	After 3 wks. both testes in scrotum. Treatment continued for 2 mths. General condition unchanged.
4	12. Bilateral; 1 year before, left orchidopexy. Now left testis in inguinal canal and cannot be pushed into scrotum. Right in inguinal canal and easily pushed into scrotum.	After 2 wks. right testis low in scrotum. After 5 mths. both testes low in scrotum. Treatment continued for 7 mths. After 6 mths. without treatment both testes low in scrotum.
5	10. Bilateral. Both testes in inguinal canals; right can be pushed into neck of scrotum, left cannot.	After 2 wks. right testis in scrotum. After 4 wks. both low in scrotum. Treatment continued for 2 mths. After 4 mths. without treatment, testes varied in position. Treatment recontinued for 2 mths. After further 4 mths. without treatment, testes low in scrotum.
6	4. Bilateral. Right testis in inguinal canal, and cannot be pushed into scrotum. Left not palpable.	After 5 wks. left testis low in scrotum, right in upper scrotum. After 2 mths. both low in scrotum, but position varies. After 7 mths. both low in scrotum.
7	14. Bilateral. Left orchidopexy previously. Now left testis in neck of scrotum, right in inguinal canal and cannot be pushed into scrotum.	After 3 mths. left testis low in scrotum. After 9 mths. right testis still in inguinal canal.
8	8½. Bilateral. Both in inguinal canals and cannot be pushed into scrotum.	After 4 mths. right testis in mid-scrotum; right inguinal hernia. After 5 mths. left still in inguinal canal.
9	11. Bilateral. Both testes in inguinal canals and cannot be pushed into scrotum. Left inguinal hernia. Scrotum retracted.	After 2 mths. right testis in scrotum. After 7 mths. right low in scrotum; position of left unchanged.
10	10. Bilateral. Both testes in inguinal canals, very small, cannot be pushed into scrotum.	After 3 mths. right testis in mid-scrotum, left at external ring and easily pushed into scrotum. After 5 mths. right low in scrotum; position of left unchanged.
11	13. Bilateral. Both testes in inguinal canals and cannot be pushed into scrotum.	After 7 mths. no change in condition.
12	5. Bilateral. Both testes in inguinal canals and cannot be pushed into scrotum.	After 7 mths. both testes at external ring and can be brought into scrotum. After 9 mths. condition unchanged.

TABLE III.—(continued)

Case.	Age in years and initial condition.	Result.
13	14. Unilateral. Left testis small and in upper scrotum. Right testis small, in inguinal canal and cannot be pushed into scrotum.	After 2 wks. both testes low in scrotum and normal in size.
14	12. Unilateral. Right testis small, in upper scrotum and easily retracted into inguinal canal. Left in inguinal canal and cannot be pushed into scrotum.	After 2½ mths. right testis low in scrotum, left in upper scrotum. Left inguinal hernia. After 5 mths. both low in scrotum.
15	13. Unilateral. Left testis in inguinal canal; right in upper scrotum and easily retracted.	After 1 mth. left testis low in scrotum, right in mid-scrotum. After 2 mths. both low in scrotum. After 1 mth. without treatment both low in scrotum.
16	14½. Unilateral. Right testis in inguinal canal and cannot be pushed into scrotum. Left in upper scrotum and occasionally in inguinal canal.	After 7 mths. left testis low in scrotum, right in inguinal canal.
17	8. Unilateral. Right testis in inguinal canal and cannot be pushed into scrotum.	After 5 wks. right testis in neck of scrotum. Position then varied. After 3 mths. remained in upper scrotum; small right inguinal hernia now present. After 6 mths. injections discontinued; 5 mths. after cessation of treatment testis still in upper scrotum; treatment recontinued for 1 mth.; 3 mths. later testis still in upper scrotum.
18	8. Unilateral. Left testis in inguinal canal and easily pushed into scrotum. Right testis in scrotum and easily pushed into inguinal canal. Scrotum retracted.	After 2 wks. left testis in scrotum; position then varied. After 6 wks. left testis remained low in scrotum; treatment continued for 3 mths. After 10 mths. without treatment neither testis in scrotum, but both can be brought easily into scrotum. Parent says position varies.
19	13½. Unilateral. Right testis in inguinal canal and cannot be pushed into scrotum.	After 2 wks. right testis in mid-scrotum. Treatment continued for 2½ mths. After 11 mths. without treatment right testis still in scrotum.
20	14. Unilateral. Right testis in inguinal canal and cannot be pushed into scrotum. Testis small.	After 2 mths. right testis in upper scrotum; small right inguinal hernia. After 12 mths. treatment with interval of 1 mth., right testis still in upper scrotum. Testis small.
21	15½. Unilateral. Right testis in external ring and can be brought through into neck of scrotum.	After 4 mths. right testis in mid-scrotum. After 6 mths. testis still in mid-scrotum. After 1 mth. without treatment testis still in mid-scrotum.
22	13. Unilateral. Left testis in inguinal canal and easily pushed into scrotum. Scrotum retracted.	After 5½ months left testis in mid-scrotum. Did not attend regularly for treatment.
23	18. Unilateral. Right testis in inguinal canal and cannot be pushed into scrotum.	After 2 mths. right testis in mid-scrotum. After 2½ mths. difficult to push testis into inguinal canal; treatment stopped. After 10 mths. without treatment right testis still in scrotum.
24	5½. Unilateral. Right testis in inguinal canal and cannot be pushed into scrotum. Left easily retracted.	After 3 wks. right testis in upper scrotum. Treatment discontinued for 3 mths. owing to patient's absence from England. On return scrotum empty, both testes in inguinal canals. Left easily pushed into scrotum. After 6 wks. left in scrotum, right in neck of scrotum.

TABLE III.—(continued)

Case.	Age in years and initial condition.	Result.
25	13. Unilateral. Right testis in inguinal canal and cannot be pushed into scrotum.	After 8 mths. testis just above external ring.
26	12. Unilateral. Left testis in inguinal canal and cannot be pushed into scrotum. Right testis small.	After 6 mths. left testis still in inguinal canal, but can easily be pushed into lower scrotum. After 9½ mths. position unchanged. Right testis increased in size.
27	12. Unilateral. Left testis not palpable. Right congenital hydrocele.	After 7 mths. condition unchanged.
28	13. Unilateral. Left testis not palpable. Small left inguinal hernia.	After 7 mths. condition unchanged.
29	13½. Unilateral. Left testis not palpable. Small left inguinal hernia.	After 5 mths. condition unchanged.
30	13. Unilateral. Left testis in inguinal canal and cannot be pushed into scrotum. Right inguinal hernia.	After 5 mths. left testis still in inguinal canal, but can be pushed into scrotum. Small left inguinal hernia.
31	23. Unilateral. Right testis at external ring; lower pole can be pushed into scrotum.	After 2 mths. position unchanged, but testis can be pushed into neck of scrotum. After 5 mths. condition unchanged.
32	12½. Both testes in scrotum but retract easily into inguinal canals.	After 2½ mths. treatment no further retraction. After 3 mths. without treatment no retraction.
33	26. Right testis in upper scrotum and easily retracted, especially when patient is lifting heavy objects.	After 1 mth. testis no longer retracts. After 3 mths. testis in mid-scrotum.

when a fresh sample of gonadotropic hormone was used. In 2 cases, after the first injection only, there was a general reaction, consisting of malaise, anorexia, nausea, and headache. This came on the day after the injection and incapacitated the patient for that day only.

There is a frequent association of inguinal hernia with the condition of imperfect migration of the testis and we have carefully examined each patient with this consideration in mind. In 4 cases a hernia was present before beginning treatment; in 5 other cases a hernia became obvious during the course of treatment. It seems highly probable that the hernia was present from the beginning and only became noticeable as the testis descended, the hernial sac presumably descending with the testis.

In several cases there has been some enlargement of the testes during treatment, and in a few slight enlargement of the penis and growth of the pubic hair—an effect ascribed to stimulation of the interstitial cells of the testes (Table III.).

Discussion

Gonadotropic extract of pregnancy urine has now been used by several investigators in the treatment of imperfectly migrated testes. The first was Schapiro¹⁶ who in 1930 treated 13 cryptorchids, in all of whom the testes descended into the scrotum

more or less completely. Since then successful results have been reported by Goldman and Stern,¹⁷ Kunstader and Robins,¹⁸ Sexton,¹⁹ Rubinstein,²⁰ Aberle and Jenkins,²¹ Brosius,²² and Webster.²³

The criticism which may be levelled at the results claimed is that the testes sometimes descend spontaneously by the time of puberty. For instance, Drake²³ has reported that 24 of 38 undescended testes came down while under observation for several years at ages ranging from 10 years to 16 in one case, amounting to 37 per cent. in whom spontaneous descent failed to take place, compared with 30 per cent. of failures in our treated cases. This, however, is the highest incidence of spontaneous descent which we have been able to find recorded and it is significant that the percentage of failures in our treated cases is smaller. We feel that it is more than a coincidence that so many of our cases responded during treatment, and that arguments in favour of the specific action of gonadotropic hormones in this respect are: (1) in 4 cases (Nos. 2, 5, 18, and 24), in which the testes descended into the scrotum during treatment, retraction of the testes into the inguinal canal occurred after treatment was discontinued; (2) in 2 bilateral cases (Nos. 2 and 4), in which an orchidopexy on one side had previously been performed, the testis subsequently retracted into the inguinal canal but descended into the scrotum again during hormone treatment; (3) a successful result was obtained in 2½ months in a patient aged 18 (Case 24), in whom spontaneous descent is highly improbable.

The mode of action of the gonadotropic hormones in bringing about testicular descent is unknown. It has been suggested by Engle¹² that they may be involved in the intra-uterine descent of the testes, as they are present in the maternal circulation throughout the period of gestation. It is postulated that maldescent may be due to inability of the testes at that time to respond to the stimulus.

In the hormone treatment of undescended testes there appears to be no hard-and-fast rule as to which type of case will be successful. Descent of both testes into the scrotum has been obtained in cryptorchids in whom the testes were situated in the abdominal cavity, and also in cases of inguinal testes which could not be brought into the scrotum on manipulation. We have observed however that in the few cases in which the testis could be pushed into the scrotum an early response was obtained. The treatment is also of advantage in those cases in whom the testes are situated high up in the scrotum and give rise to pain or discomfort due to retraction into the inguinal canal on exertion. Failure is obvious in cases of ectopic testis, and descent will not take place in cases of abdominal testes which do not engage at the internal ring, or of inguinal testes which are held up by adhesions. In cases which do not respond to treatment and require operation subsequently, the administration of gonadotropic hormones before and for some time after operation may be of advantage in ensuring against any likelihood of postoperative retraction into the inguinal canal.

In the treatment of refractory cases it should be borne in mind that after prolonged administration of gonadotropic hormone there ensues a phase in which there is loss of sensitivity to the stimulus, as evidenced by the experimental work of Selye, Collip, and Thomson quoted above. For this reason it is advisable to discontinue treatment after 6-9 months and to resume it after an interval of 3 months,

when it is probable that sensitivity has returned. In this manner the possible occurrence of atrophy of the gonads, which these authors found in some of their experimental animals treated for a long time, is prevented.

Summary

Thirty-three patients, aged 4 to 26 years, with imperfectly migrated testes have been treated with the gonadotropic hormones of pregnancy urine (pregnynl), given in doses of 500 rat units intramuscularly twice a week. Both testes descended into the scrotum in 6 of the bilateral cases and one testis in 4, while in 2 cases descent has not occurred. In 11 out of 19 unilateral cases the testis descended, and in 2 cases with the testis high in the neck of the scrotum it assumed a position low in the scrotum. Successful results were obtained within periods ranging from 2 weeks to 14½ months. The testes have remained in the scrotum in 9 out of 11 cases followed for 1-11 months after cessation of treatment.

We wish to thank the physicians and surgeons of St. Bartholomew's Hospital and elsewhere who have kindly referred these cases to us. One of us (A. W. S.) acknowledges with thanks personal and expenses grants from the Medical Research Council. We are indebted to Dr. A. X. Macbeth, of the Organon Laboratories, for generous supplies of pregnynl.

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CONFERENCE ON ATMOSPHERIC POLLUTION.

Thirty-eight representatives of local authorities and other organisations met on Nov. 25th in half-yearly conference at the offices of the Department of Scientific and Industrial Research to receive a report from Dr. G. M. B. Dobson, F.R.S., chairman of the Atmospheric Pollution Research Committee, on the progress of recent researches. A number of offers to undertake additional investigations and observations were received. Mr. J. W. Beaumont, of Halifax, reported upon the analysis of atmospheric dust samples collected in Leeds, Halifax, and Huddersfield. Representatives of the London County Council mooted the desirability of reviewing measures to obviate the emission of soot, ash, grit, and gritty particles from chimneys such as those of electric power stations. Other local authorities emphasised the need of wider remedial measures for combating pollution. The conference appointed a small committee to put forward concrete proposals for the application of such measures by industry and to devise a scheme of financial coöperation.

BOVINE PHTHISIS

ITS INCIDENCE IN NORTH-EAST SCOTLAND

COUNTY CASES

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THE investigations of Dr. W. T. Munro, Glenlomond Sanatorium, first directed attention to the relatively frequent occurrence in Scotland of phthisis pulmonalis due to bovine bacilli. In the period 1923-30 he obtained cultures of tubercle bacilli from the sputum of 366 phthisical persons, most of them resident in the middle east of Scotland, and found that 15 were of bovine and 350 were of human type, and I was a mixture of these two types. In 1931 Dr. Munro and one of us (A. S. G.) extended the inquiry to the southern counties of Scotland. The results showed that in this part of Scotland also phthisis pulmonalis was caused by bovine bacilli with about the same relative frequency as in the middle east of Scotland. Associated in these districts with this unusual frequency of bovine phthisis there was a high percentage of bovine infections in other forms of human tuberculosis. For example, about a third of the cases of tuberculous meningitis and approximately a third of bone and joint tuberculosis could be attributed to infection with bovine tubercle bacilli. On the other hand in England, taken as a whole, the percentage frequency of bovine infections was less than in Scotland, both in the non-pulmonary and in the pulmonary forms of the disease. These results suggest that the incidence of bovine phthisis in a country varies with that of non-pulmonary tuberculosis of bovine origin, and that where the proportion of bovine infections in the latter forms of the disease is high there phthisis of bovine origin will also show a rise.

In order to test this hypothesis and at the same time to ascertain the percentage incidence of bovine phthisis in a new district we have undertaken a bacteriological investigation of phthisis pulmonalis in north-east Scotland.

This district is particularly suitable for such an inquiry, since recent investigations have shown that a relatively large proportion of the cases of non-pulmonary tuberculosis admitted to hospital in the

TABLE I

Form of tuberculosis.	No. of cases.	Human.	Bovine.
Meningitis ..	6	3 (13, 14, 27)	3 (1, 13, 61)
Generalised ..	3	2 (5, 36)	1 (4)
Renal ..	7	4 (20, 40, 47, 52)	3 (11, 23, 27)
Bone and joint	9	7 (6, 14, 15, 21, 37, 38, 64)	2 (4, 25)
Cervical gland	5	4 (12, 21, 36, 62)	1 (10)
	30	20	10

The figures in parentheses are the ages of the patients.

city of Aberdeen are infected with bovine tubercle bacilli. The investigations to which we refer were begun in 1933 and were limited at first to cases of tuberculous meningitis. The results in 15 cases were reported in 1934; of these 8 were due to human and 7 to bovine bacilli; 12 of the cases (6 human and 6 bovine infections) were in persons resident in the city. In 1934 the investigations were extended

to include all forms of non-pulmonary tuberculosis, of which 30 cases have since been examined. The results are summarised in Table I.

Of the 30 cases 6 were of tuberculous meningitis, and it is interesting that as in the first series of meningitis cases from Aberdeen the proportion of human and bovine infections was equal. The ratio of human to bovine infections in the cases of cervical gland and bone and joint tuberculosis is less than in other Scottish series, and thus we attribute to the fact that the patients were mainly adolescent and adult. Of the 30 cases 14 occurred in children under sixteen years of age, and of these 7 were bovine and 7 were human infections. Among the 16 adults there were 3, 1 with spinal and 2 with renal tuberculosis, who were infected with bovine bacilli.

Results with Pulmonary Tuberculosis

The present inquiry was begun in April, 1934, and was in the first instance restricted to county cases of pulmonary tuberculosis—that is to say, cases from the rural districts and small towns of north-east Scotland chiefly of the counties of Aberdeen, Banff, and Moray. We have now completed the investigation of 103 cases and as a relatively high proportion of these has yielded bovine bacilli we think it desirable at this stage to publish an interim report of our results. We are indebted to Dr. H. J. Rae, chief regional medical officer, to Dr. G. S. Banks, regional tuberculosis officer, to the medical officers of health of other authorities, and to very many medical practitioners for their courtesy and kindness in supplying specimens and information.

The typing of the strains was done by one of us at the Field Laboratories, Cambridge. In all but one instance the cultures were raised directly from the sputum with the aid of potassium hydroxide.

The method was as follows: equal parts of the sputum and 5 per cent. KOH were thoroughly mixed and incubated for $\frac{1}{2}$ to $\frac{3}{4}$ hour at 37°C. A small quantity was then spread evenly over the surface of coagulated egg, from 3 to 4 tubes—one of 5 per cent. glycerin egg and the rest of plain egg—being sown. With one specimen of sputum the direct cultures failed owing to a spore-bearing contaminant, and in this instance recourse was had to the guinea-pig. After from 3 to 4 weeks' incubation the tubes were examined and a provisional diagnosis of type was made on the characters of the primary colonies. If in primary culture on egg and subsequently in subculture on glycerinated potato the cultural characters were those of the eugonic human tubercle bacillus the strain was not tested as to its virulence. On the other hand, all the strains which were dysgonic on egg in primary culture or proved dysgonic on glycerinated potato in subculture were tested as to their virulence for animals.

The cultures obtained from the 103 cases fell into the three following groups: dysgonic bovine, dysgonic human, and eugonic human.

CASES WITH BOVINE BACILLI IN THE SPUTUM

Tubercle bacilli of the bovine type were cultivated from the sputum of 13 of the cases. Except in one case (C.S. 37) where the patient died before there was any suspicion that the infection was bovine all these cases were examined twice and one was examined three times, the intervals between the specimens ranging from 23 to 128 days. The total number of strains from the 13 cases was therefore 26. All the strains were typically dysgonic bovine in cultural characteristics and none showed any sign of the presence in them of eugonic human tubercle bacilli. Each of the 26 strains was tested on the rabbit, 12 strains from 10 cases by intravenous and

TABLE II.—GIVING SEX, AGE, OCCUPATION, AND CHIEF CLINICAL PARTICULARS OF EACH BOVINE CASE

No.	Sex and age.	Occupation.	Previous glandular tuberculosis.	Clinical duration of pulmonary tuberculosis.	Distribution of tuberculosis.	Family history.
S. 2	M., 23	Clerk.	Cervical adenitis at 9 yrs.	2½ yrs.	Left apex.	None.
S. 3	F., 17	At home.	None.	A few mths.	Right middle lobe and hilum.	Mother cured.
C.S. 9	F., 24	Clerk.	None.	About 4½ yrs.	Bilateral apical, cavitation right.	Yes.*
„ 19	F., 20	Occasional farmworker.	Cerv. aden. at 7-8 yrs.	4 yrs.	Bilateral fibrotic.	None.
„ 26	F., 27	Domestic worker.	Abdominal glandular at 20 yrs.	5 „	Right lung. No cavities.	None.
„ 28	F., 39	Housewife.	None.	4½ „	Left upper and middle lobes.	Yes.
„ 37	F., 35	Housewife.	None.	1½ „	Widespread in lungs, left worst.	Husband.
„ 40	F., 23	Seamstress.	None.	3 mths.	Left apex.	None.
„ 45	F., 31	Domestic worker.	None.	7 yrs.	Started left apex, both lungs in 1933; larynx affected.	None.
„ 80	M., 36	Trawler fireman.	Neck gl. enlg. and scraped in childhood.	Not fixed, never robust.	Left lung.	Parents' relatives.
„ 94	F., 21½	Domestic worker.	Cerv. aden. at 16 yrs.	Pleurisy a year ago.	Left apex chiefly.	None.
„ 102	M., 28	Grocer's assistant.	None.	6 mths.	Both lungs.	Father's brother.
„ 103	F., 41	Housewife.	None.	9 yrs.	Bilateral.	None.

* A sister, aged 19, died of pulmonary tuberculosis in 1931. A brother (aged 20) and a sister (aged 18) had neck glands excised at 7 years (1921) and 4 years (1920) respectively.

19 strains from 13 cases by subcutaneous inoculation. Twelve rabbits were injected intravenously with 0.01 mg. of culture or less; they died of typical severe general tuberculosis in from 16 to 59 days. Nineteen rabbits were injected subcutaneously with 10 mg. or less; one died in 34½ days and showed moderate general tuberculosis; the remainder died in from 35 to 91 days (average 64.1 days) of severe general tuberculosis typical of infections with bovine bacilli.

In 5 of the 13 cases there was a history of previous glandular tuberculosis. Four of these patients had suffered from tuberculous cervical adenitis, three (S. 2, C.S. 19, C.S. 80) in childhood, and one (C.S. 94) in adolescence. The fifth patient (C.S. 26) was found during an exploratory abdominal operation five years ago (by Dr. Alec Robertson) to have large glandular masses in the abdomen. There is little doubt that in these 5 cases the channel of entry of the bovine bacilli was the alimentary canal. In 8 of the 13 cases there was no past history and no present evidence of glandular enlargements. Four of the 8 have been radiographed but none showed calcareous abdominal glands. The question therefore arises whether any of these persons could have been infected by inhalation of bovine bacilli discharged either from tuberculous cattle, and suspended as dust in the air of shippens or byres, or from human beings suffering from bovine phthisis.

None of the 8 persons however, so far as could be ascertained, had ever come into direct contact with cattle and 3 of them were the only clinically tuberculous members of their families. On the other hand, 5 of the 8 persons had been in contact with a relative or relatives suffering from pulmonary tuberculosis. In one case the infected relative was the husband, in another a sister, in another a paternal uncle, in a fourth (C.S. 28) a paternal uncle and two maternal aunts. All these relatives had died of pulmonary tuberculosis some time before our inquiry began. In the remaining case (S. 3) the mother showed X ray evidence of old healed tuberculosis of

the lungs. We were unable therefore to ascertain whether any of these 5 cases might have been infected with bovine bacilli from a human source. The possibility of extra-familial infection with bovine bacilli may, we think, be excluded as no other cases of bovine phthisis were found in any of the localities in which a bovine case occurred.

The further histories of 12 of the 13 patients since the bacteriological investigations are as follows: the condition of five of the patients (S. 2, S. 3, C.S. 19, C.S. 94, and C.S. 103) has improved under treatment, though the prognosis in one is doubtful. In two (C.S. 9 and C.S. 28) the general condition is fairly good but the disease is slowly progressing. In three (C.S. 26, C.S. 45, and C.S. 102) the disease is steadily progressing and the prognosis is bad; one of these (C.S. 102) has diabetes. Two of the patients (C.S. 37 and C.S. 80) have died but an autopsy was not made in either case.

The duration of clinical tuberculosis when sputum was taken for examination ranged from a few months to nine years. In 4 of the 5 cases with previous glandular tuberculosis the intervals between the first infection and clinical signs of pulmonary tuberculosis ranged from about 2 to 12 years, while in the fifth the interval could not be ascertained.

CASES WITH TUBERCLE BACILLI OF THE HUMAN TYPE IN THE SPUTUM

Cultures belonging to the human group of tubercle bacilli were obtained from 90 persons, of whom 45 were males and 45 were females. The ages of the patients ranged from nine to seventy-seven years, but only 8 were under twenty and 15 over fifty years of age. Of the 90 patients 25 were in employment or had been employed as farm servants.

The strains from 85 of the cases produced on the various differential media the luxuriant growths of the eugonic human type of tubercle bacillus. The strains from the remaining 5 were eugonic on egg and glycerin egg and dysgonic on glycerinated potato.

The virulence of each of these five strains was tested on the rabbit by intravenous inoculation and on the guinea-pig by subcutaneous inoculation, the dose of culture for each animal being 0.1 mg. One rabbit died of tuberculosis in 98 days; four rabbits were killed in from 71 to 138 days, and showed slight to moderate generalised tuberculosis. The tuberculous lesions in the five rabbits were similar in appearance and distribution to those which follow intravenous inoculation of eugonic human bacilli in equivalent dose. The guinea-pigs died in from 19 to 53 days, and showed general tuberculosis. The lesions were slight in two guinea-pigs which died prematurely, and of only moderate severity in the remaining three. The characters and virulence of the 5 strains were therefore those of the dysgonic human type of tubercle bacillus. In order to ascertain whether or not the bacilli in such cases are always of the dysgonic human type a further sample of sputum from each of two of the patients was examined bacteriologically after intervals of 9 and 7½ months respectively. The cultures were identical in cultural characters with those first isolated.

MICROSCOPICAL APPEARANCES OF THE TUBERCLE BACILLI IN THE SPUTUM

After determining the types of the tubercle bacilli in the 103 cases of pulmonary tuberculosis the records of the numbers and microscopical characters of the tubercle bacilli in the specimens of sputum were analysed.

Bovine bacilli (13 cases).—In 2 instances the tubercle bacilli were scanty, in 6 moderately numerous, in 3 numerous, and in 2 very numerous. In 10 of the 13 cases the bacilli were predominantly short and uniformly stained, and only few were of medium length and beaded. In the remaining 3 cases the bacilli varied in length but were for the most part of moderate length, beaded, and curved and indistinguishable from ordinary tubercle bacilli of human type.

TABLE III.—GIVING REGIONAL DISTRIBUTION OF BOVINE CASES

County.	No. of cases.	Eugonic human.	Dysgonic human.	Bovine.	Percentage bovine.
Aberdeen ..	46	36	3	7	15.2
Banff ..	22	18	..	4	18.2
Moray ..	8	6	..	2	25.0
Kincardine ..	7	7	..	..	0.0
Caithness ..	4	2	..	..	0.0
Inverness ..	1	1	..	..	0.0
Sutherland ..	1	1	..	..	0.0
Nairn ..	1	1	..	..	0.0
Shetland ..	9	9	..	..	0.0
Orkney ..	3	2	1	..	0.0
—	103	86	4	13	12.6*

* Or 14.3 on the mainland.

Human bacilli (90 cases).—In 1 specimen no tubercle bacilli were found microscopically. In 4 specimens bacilli were scanty, and in 68 they were moderately, in 12 very, and in 5 extremely numerous. The microscopical appearance of the bacilli showed some variation. In 67 instances the bacilli were described as being of ordinary human type—that is to say, they were beaded or vacuolated, curved or bent, and predominantly of good length. In 21 instances a considerable proportion of the bacilli were notably short, the rest being ordinary beaded forms. In some instances the short forms were uniformly stained, and it was thought at the time that the bacilli might turn out to be bovine but this inference proved to be incorrect. In the other instances the short forms tended to beadedness, and uniformly stained forms were not conspicuous.

Discussion

This series of cases of pulmonary tuberculosis from north-east Scotland has yielded the highest percentage of bovine infections yet recorded for this form of human tuberculosis. An analysis of the

cases according to their counties of origin shows that all the bovine cases were derived from three counties—namely, those of Aberdeen, Banff, and Moray—giving bovine percentages of 15, 18, and 25 for the counties respectively, and 17.1 for the three counties together. This last percentage is more than three times as high as that (nearly 5.0 per cent.) ascertained by Munro and Griffith for the rest of Scotland.

It is important to consider the origin of these cases and the cause of the exceptionally high incidence of bovine infections in pulmonary tuberculosis in the north-east of Scotland. There is now no doubt that the principal source of bovine bacilli in human tuberculosis is the milk of tuberculous cows and from clinical evidence we have concluded that 5 of our cases were infected through this agency. In the remaining 8 cases we have not obtained any evidence—either clinical or pathological—that the infection was primarily alimentary. The absence of clinical evidence of tuberculous infection by ingestion does not however necessarily exclude the alimentary canal as the portal of entry of the bacilli and in some of the cases they may have entered through the intestinal mucous membrane as occurred in several similar instances already reported where calcareous mesenteric glands were found on autopsy or, as in four recently discovered cases, were seen on radiological examination.

As we have had to do with strictly rural areas in which many of the inhabitants are employed on farms the possibility of infection through inhalation of infected dust in shippens, &c., has been considered. Only one of the persons with bovine bacilli in the sputum, however, had worked on a farm, and she had suffered from cervical adenitis in childhood and was therefore probably infected through milk.

The presence in a community of cases of bovine phthisis pulmonalis introduces the possibility of infection with bovine bacilli through the agency of human sputum. In this series we have no bacteriological evidence that such transmission might have occurred as, although in five of the families there was a history of tuberculosis in other members, no material, for reasons previously stated, was available for investigation.

Without taking account of any of the cases in which the source of the bacilli was undetermined we find that more than 6.5 per cent. of the bovine phthisis cases from the counties of Aberdeen, Banff, and Moray were of alimentary origin. This shows a greater relative frequency of bovine phthisis of alimentary origin in north-east than in the rest of Scotland, and one may ask whether the opportunities of infection through milk are more abundant in these counties than in other parts of the country.

In considering this question it must be remembered that in the alimentary cases the dates of infection with bovine bacilli were long anterior to the appearance of clinical signs of pulmonary tuberculosis which also had been in existence for varying periods before the bacteriological investigations were made. There are no records relating to the incidence of tuberculosis in cattle so far back. We do not know accurately even at the present day the extent to which cattle in the north-east of Scotland are infected with tuberculosis, but judging from the results of milk testing the degree of infection in milk sent to Aberdeen does not appear to be greater than in that delivered to the other principal cities of Scotland.

Can the high incidence of bovine pulmonary tuberculosis be correlated with a greater consumption

of milk in these counties? In 1934 the results of an inquiry into the average amount of liquid milk consumed in Scottish households were published by the Department of Health for Scotland. The investigation revealed that the consumption of milk varies greatly in different localities and is highest in the region—which includes the area we are investigating—north of the industrial belt of Scotland. In this region the average daily consumption per head of the population of all the counties together exceeds 0·8 pint, the county of Aberdeen having the highest consumption—namely, 1·03 pint per head. There is therefore in these counties a definite relationship between the amount of milk consumed and the incidence of bovine infections in human beings. In this connexion we may mention that 12 of the patients with bovine bacilli in the sputum had been in the habit all their lives of taking raw milk as a beverage and with porridge while the remaining one developed cervical adenitis in childhood and did not consume much in adolescent or adult life owing to his occupation as marine engineer. It is, we think, to the national custom of taking untreated uncertified milk with porridge, fruit, &c., and at other times, that the exceptional frequency of bovine infections in Scotland is to be attributed.

The relatively large proportion of bovine infections found in this series of phthisis cases may be in part fortuitous—due to a chance grouping of cases which owed their origin to infections acquired in different years—and comparable with the experience of Munro in the year 1927–28, when as many as seven of the cases of pulmonary tuberculosis admitted in that year to Glenlomond Sanatorium were found to be infected with bovine bacilli. To illustrate how such a grouping of cases might come about we may mention that in the cases preceded by glandular tuberculosis the intervals between infection and clinical signs of pulmonary tuberculosis ranged from about 2 to 12 years.

To what extent the high percentage of bovine infections in this series was the result of chance grouping can be determined only by the systematic investigation in these counties of all existing cases of pulmonary tuberculosis and of those which arise during a succession of years. We are continuing our investigations on these lines.

SUMMARY

(1) The types of tubercle bacilli have been determined in the sputum of 103 cases of phthisis pulmonalis from the rural and small urban districts of north-east Scotland, including the Orkney and Shetland Isles. (2) The tubercle bacilli were of the human type in 90 cases (85 eugonic and 5 dysgonic), and of the bovine type in 13 cases. (3) All the 26 strains obtained from the 13 bovine cases were typically dysgonic and highly virulent for rabbits. (4) Of the 13 bovine cases 7 were derived from the county of Aberdeen (15·2 per cent. of 46 cases), 4 from the county of Banff (18·2 per cent. of 22 cases), and 2 from the county of Moray (25·0 per cent. of 8 cases). (5) Twelve cases from the counties of Kincardine, Caithness, and Sutherland, and 12 from the Orkney and Shetland Isles yielded tubercle bacilli of the human type only.

DEVIZES AND DISTRICT HOSPITAL.—Sir Ernest Wills, lord-lieutenant of Wiltshire, has opened a £23,000 extension to this hospital, which provides six private wards, two public wards, and an isolation block. All but £1600 of the money required had been raised and this amount was reduced by a donation of £100 from Sir Ernest Wills.

AMIDOPYRIN HYPERSENSITIVITY AND AGRANULOCYTOSIS *

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THE first hint that amidopyrin is a cause of agranulocytosis was the recognition of a number of cases whose only common factor was that the patients had been taking this drug. Madison and Squier¹ in the United States observed 14 such cases in succession, and we² had 6 in the course of two years in the medical department of the Aalborg County Hospital. The latter developed in hospital in patients who were being treated for entirely different diseases, and all they had in common was that they had been given amidopyrin, its use being continued until after agranulocytosis appeared.

These observations have given rise to a long series of communications from America, Holland, and Scandinavia, and it has been shown that a large proportion of agranulocytosis patients have taken amidopyrin or medicine containing it. Plum³ collected 41 cases of amidopyrin agranulocytosis, with 37 deaths, which occurred in Denmark between May, 1933, and July, 1934. On referring also to the clinical notes of cases treated before the rôle of amidopyrin was recognised, it is possible to show that some of these patients had had this drug, but information about the drugs employed is apt to be incomplete. Often it is hard to get straightforward information even from the patient—partly because neither doctors nor the public think it of much importance which antineuralgic remedy is given and partly because amidopyrin forms part of preparations bearing other names. The cases in which the disease has developed in hospital seem to us to provide the best grounds for holding the drug responsible.

Although amidopyrin has been used in very large quantities, agranulocytosis is rare; and this suggests that we are not dealing with an ordinary intoxication, but with a state of hypersensitivity—an allergic phenomenon. The mortality is high, approximating to 90 per cent., and hence experiments to demonstrate hypersensitivity have not been numerous. But a fair number have now accumulated, and at least 12 have been published (Madison and Squier (2)¹; Plum (4)^{3, 14}; Zinberg, Katzenstein, and Wice⁴; Benjamin and Biedermann⁵; Corelli⁶; Bonsdorff⁷; Brøchner-Mortensen⁸; and Palm⁹). These investigations have shown that patients who have recovered from agranulocytosis caused presumably by amidopyrin react to small doses by a sharp fall in the granulocytes, often accompanied by fever, malaise, and dysphagia. It has also been proved that they do not react to substances like sodium diethyl-barbiturate and aspirin (Madison and Squier,¹ Benjamin and Biedermann⁵), and von Bonsdorff⁷ has demonstrated that a patient recovering from agranulocytosis which was caused by arsphenamine (salvarsan) did not react to amidopyrin. Evidently the hypersensitivity is specific, in the sense that convalescents from agranulocytosis with a different ætiology are not hypersensitive to amidopyrin.

* The first part of this communication was read at the Congress for Internal Medicine in Copenhagen, June, 1935.
¹ Madison and Squier¹ have also published experiments which show that cutaneous application of a 40 per cent. amidopyrin emulsion can cause a fall in the leucocytes, in addition to cutaneous lesions in patients hypersensitive to amidopyrin.

A CASE INVESTIGATED

It seems important to record further tests of this kind, and we therefore bring forward the following report:—

The patient, a woman of 25, was treated in the Aalborg County Hospital for chronic rheumatic polyarthritis in 1932, 1933, and again in 1935. During her first stay in hospital, in 1932, she was given amidopyrin for a few days only—a total of 1.8 g. She did not take any amidopyrin in the interval between her first and second visits to hospital. When admitted in 1933 she received 0.3 g. three times daily from Feb. 9th till July 3rd when she was discharged from hospital—in all 126 g. On discharge she continued to take the same dose almost every day until the middle of April, 1934 (total about 250 g.). She then developed pains in the throat, cough, and a rise in temperature to 40° C., but for some reason or other she stopped taking amidopyrin on her own account; she improved rapidly and her temperature was normal in a week. She again took amidopyrin (0.3 g. three times a day) from the middle of May until the beginning of July—in all 40 g. She began to feel very tired and again had a rise of temperature to 40° C., vomiting, and after a few days pains in the throat. At this time she read in a newspaper about the danger of amidopyrin and stopped taking it. This attack lasted 5–6 days. She felt well afterwards apart from her joint pains. In January, 1935, she tried a single dose of 0.3 g. amidopyrin and this was followed by fever, pain in the throat, and malaise, the attack lasting 24 hours.

On April 9th, 1935, she was again admitted to hospital and treated with sodium salicylate (1.0 g. six times daily). We decided to see whether hypersensitivity to amidopyrin could be proved in her case, in order, if possible, to confirm the suspicion that the two or perhaps three attacks she had had at home could be ascribed to agranulocytosis. We first estimated the number of leucocytes when salicylate was given alone. Ten counts were made in the course of 24 hours, and as will be seen from Fig. 1 there were only small variations, which are undoubtedly normal spontaneous fluctuations. Nor did the differential counts show anything particular.

On April 21st a leucocyte count was made at 8 A.M., and then 0.2 g. amidopyrin was given. After this the leucocytes were counted every half-hour until 9 P.M., on the following day every hour from 8 A.M. till 8 P.M., the next day four times, then twice, and on the following three days once each day—in all 49 differential counts. As is shown in Fig. 2 there was an initial fall from 10,000 to 7100 granulocytes in 1–2 hours, then again a short rise followed by a protracted fall to 1900 at 7.30 P.M.—that is, a fall to less than 20 per cent. of the initial value. The lowest granulocyte count was 45 per cent. The curve rose slowly again, but only reached roughly normal values four days after the test dose was given. It will be seen from the curve that the granulocyte decrease lasted the longest. The total number rose more rapidly than the granulocytes on account of a relative lymphocytosis.

While previously there had been less than 1 per cent. granulocytes with single-lobed nuclei, at 4 P.M. and after there were 4–6 per cent. They remained at this height for about five hours and then decreased and varied between 0.3 per cent. and about 2 per cent. On the day following the dose of amidopyrin 6 per cent. myelocytes and

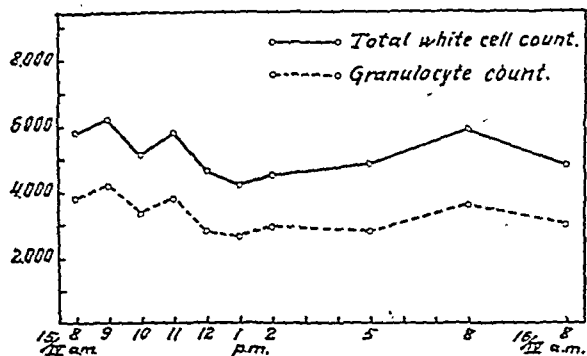


FIG. 1.—Patient subject to agranulocytosis. Effect of sodium salicylate (1.0 g. six times daily) on white cell count.

myeloblasts were found at one count, and two days later 3 per cent. at one count, while only an occasional cell of this kind was observed at the other counts.

Concurrently with these events the sedimentation test showed the following: on April 21st, before the administration of amidopyrin, 11 mm. after one hour; at 4 P.M., 19 mm.; on April 22nd, 13 mm.; on the 23rd, 16 mm.; on the 24th, 14 mm.; and on the 25th, 10 mm.

The patient became ill five hours after the dose with frontal headache, lumbar pains, slight dysphagia, nausea, and vomiting. Next day she complained of lassitude, after which the symptoms ceased. Her temperature rose from 37° to 38.2° C. and later to 38.6°.

This experiment shows very plainly that the patient was hypersensitive to amidopyrin and reacted by a very pronounced fall in the number of leucocytes, mainly granulocytes. There were, at the same time, signs of an increased formation or outflow of granulocytes. On the whole the results of the experiment are in accord with those previously published.

The case is of interest also because the experiment strongly suggests that the two or three attacks the patient had at home were attacks of agranulocytosis caused by amidopyrin. In this respect it resembles the published cases of relapsing agranulocytosis in which the attacks were always caused by taking amidopyrin. Fairly large total quantities were needed in our case to make the patient sensitive. Before the first attack she had received about 380 g.

during some fourteen months, and it was not until then that it seemed to make her ill. Like earlier cases this shows, that because a patient has been given amidopyrin for a long time, it does not follow that he can tolerate it.

THE ENDOCRINE FACTOR

Experiments such as the above seem to prove that amidopyrin can cause agranulocytosis in hypersensitive persons. But which are hyper-

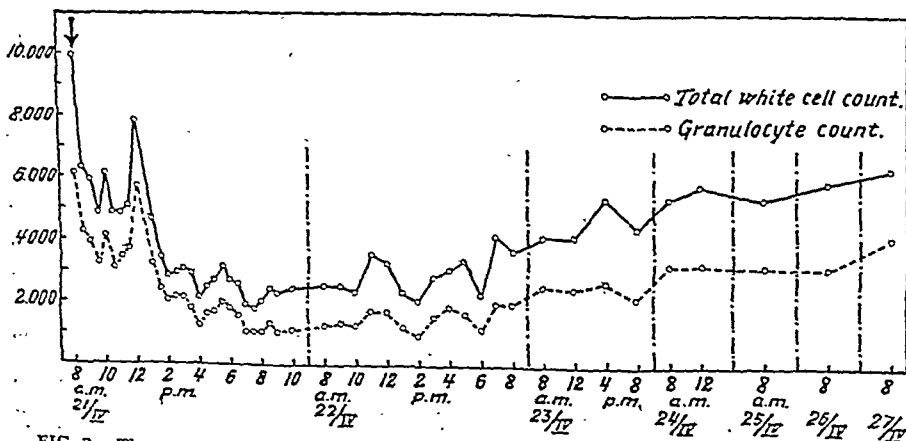


FIG. 2.—The same patient. Effect of a single dose of 0.2 g. amidopyrin taken at point indicated by arrow.

sensitive, and why? Is the condition periodic or constant? And how does this granulocytopenic reaction develop? We have tried to answer these questions, and our results may be of interest though negative.

Of the 7 cases of amidopyrin agranulocytosis in our series² all but one of the patients were middle-aged or rather elderly women, the exception being a woman of 33. The diseases for which they were treated before they developed agranulocytosis were very various—namely, pernicious anæmia (1), polyarthritis (1), Graves's disease (1), adiposity plus arthritis of the shoulder (1), diabetes mellitus (1), adiposalgia and varicose veins (1), and headache and indisposition attributed to menopause (1). Different as these conditions appear at first sight, they have (at any rate five of them) one common feature—namely, that endocrine function can be assumed to be abnormal.

Since endocrine disturbances are supposed to play a part in the production of allergic phenomena it might be supposed that patients with such disorders would be predisposed to amidopyrin hypersensitivity, and we have accordingly studied the leucocyte variations after amidopyrin in 19 patients with various diseases in which endocrine function was presumably abnormal—namely, diabetes mellitus (9), Graves's disease (4), Addison's disease (1), chronic rheumatic polyarthritis (1), primary progressive polyarthritis (2), dystrophia adiposo-genitalis (Fröhlich) (1), and pituitary dwarfism (1). In these patients the total number of leucocytes as well as the granulocytes were counted, a total of ten counts being made in the 24 hours (at 8, 9, 10, and 11 A.M., noon, and 1, 2, 5, and 8 P.M., and again at 8 A.M.). Amidopyrin (0.2 g.) was administered directly after the first count at 8 A.M. In 4 of the patients an equal number of counts were made before the administration of any drug in order to get an idea of the normal daily fluctuations. Similar counts were made in 2 cases after giving 1.0 g. acetosalicylic acid to see if any leucocyte variations occurred in response to that

Holten¹²), but this does not seem to hold good since Palm⁹ has reported a case of amidopyrin agranulocytosis without achylia, and we have not been able to demonstrate any effect of amidopyrin on the leucocyte count in 3 patients with definite achylia. It is accordingly impossible to arrive at any conclusion as to whether a patient is or is not hypersensitive

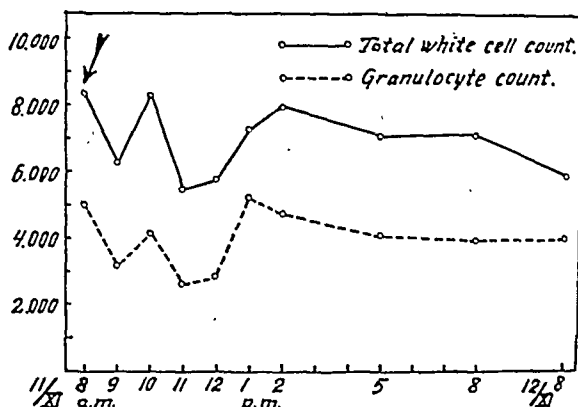


FIG. 4.—Patient suffering from Graves's disease. Effect of 0.2 g. amidopyrin.

to amidopyrin merely by considering the "basic disease" of the patient.

Figs. 3 and 4 represent the leucocyte and granulocyte variations in two typical cases. The normal fall in leucocytes between 10 A.M. and noon and the normal rise between 2 and 4 P.M. are easily discernible. They represent the normal "tide" which occurs twice every 24 hours, for there is a similar one between 9 P.M. and 3 A.M. independent of muscular activity, consumption of food, sleep, or temperature. These "tides" were first demonstrated by Shaw.¹³

SUMMARY

(1) A case is recorded of amidopyrin hypersensitivity with granulopenic reaction in a woman aged 25, who had had two attacks, at home, of what was supposed to be agranulocytosis. The patient had received about 380 g. of amidopyrin in the course of 14 months, before the symptoms of hypersensitivity appeared. (2) An examination of the agranulocytosis cases in the hospital (all attributable to amidopyrin) showed a high incidence of endocrine disturbances. An attempt was accordingly made to discover whether patients with endocrine disorders show a greater leucocyte response to amidopyrin than other patients or whether they react abnormally at all. It was not possible to demonstrate any such difference.

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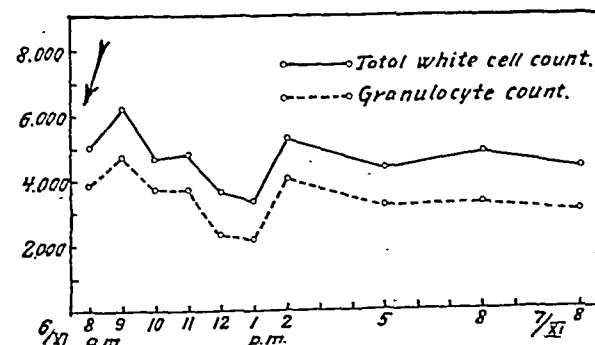


FIG. 3.—Patient suffering from Graves's disease. Effect of single dose of 0.2 g. amidopyrin.

preparation. Control counts were also made on 6 patients admitted for other diseases (carcinoma of stomach, bronchial asthma, and neurosis), after 0.2 g. amidopyrin. The result of these investigations shows that at any rate with the small doses of amidopyrin used here one cannot demonstrate any difference between the leucocyte variations of patients suffering from endocrine diseases and those of patients suffering from other diseases or from normal fluctuations (Figs. 3 and 4).

It has further been suggested that achylia might predispose to amidopyrin hypersensitivity (Moltke,¹¹

THE TREATMENT OF ACUTE FRONTAL SINUSITIS

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THE treatment of acute frontal sinusitis should be purely medical. First let the bowels be emptied. My grandfather used a blue pill and a black draught which he called "a birch broom and a bucket of water." I prefer castor oil because of its certainty of action and because it leaves the patient costive for a while. Once the gut has been emptied it may be left to itself till the invasive stage of the acute infection has passed. It is the small intestine that needs to be emptied, and a full colon or an isolated scybalous mass may prevent this. It is then that a skilled nurse should be called in. She should be able to deal with it within a limit of 48 hours. It is sometimes difficult to persuade those who are in attendance on the patient of the need for the brisk purge when he or she has "taken something" or "always looks after that." The little dose of salts or senna should be neglected and the emptying process started afresh.

The next point is position. The ordinary method of propping a patient in bed is never effective. While he is upright a shortness of the hamstrings may make the position a cause of discomfort or even of pain. To relieve this he bends the hips and knees and shortly sinks down. He then lies upon the lower part of his chest inhibiting movement in this region and thus diminishing the air-entry into the bases of the lungs. If the patient is nursed in bed he needs a pillow under the knees lashed to the head. Better is it to let him be in an armchair. The idea of nursing a patient "in bed in an armchair" is a difficult one to get into the minds of medical men, and still more into those of the nursing profession. Yet it may be remembered that Hajek kept all his patients after the septum or a sinus operation in this position for 48 hours; and that in acute infections Sydenham, who practised before Clifford Allbutt had invented the clinical thermometer and therefore dealt with "fever" rather than with "pyrexia," constantly warns us that "the patient should sit up at least some hours every day, much experience having shown that this is of singular service"¹; or advises him "to keep his room without lying always in bed."² Personally I would not even keep the patient in the armchair but leave him some freedom to move about. He can then use a commode or, if the house be warm, go to the closet and thus be spared the agonies of the bed-pan. However the patient is nursed there is a small point that needs attention. The head must be in a position slightly flexed, but this must not be sufficient to cause the slightest obstruction above the clavicle. It is remarkable how easy it is for some slight pressure to happen on the jugulars, and this results in a great increase of the headache. Further, the head must be so retained by pillows that the patient does not have to use the muscles of the neck to balance it in this position. I would not mention this point did I not see it so often neglected.

The room must be warm but well ventilated, of

an even temperature, and I believe that it is better when the atmosphere is moist. I suspect that we have neglected a valuable remedy in giving up the bronchitis kettle for this complaint.

We come next to diet. The most important factor is the fluid. I demand that my nurses should get 300 ounces into an adult in a severe case. This will not be effected without personality on their part as well as perseverance and a set organisation. I have described elsewhere³ how this may be done. The fluid usually given is fruit juice and water with sugar or glucose added, and the latter then provides a considerable caloric value; but to some it is a sickly drink and efforts should not be made to compel it against the patient's wish. Plain water is better than no fluid. The use of rectal salines should not be necessary in this complaint and are disturbing to the patient, who should be kept at rest except when movement is voluntary. Food should be given as well, and if he will the patient may take anything. It is a good sign. Probably a light farinaceous diet is all that he will feel inclined for with perhaps boiled fish and potatoes. The diet should include some roughage to begin to replace that which has been lost.

That is all the treatment that is necessary. Two other things may be considered, drugs and applications to the nose. I am opposed to any attempt to bring down the temperature artificially by any medication. Again to quote Sydenham: "The fever itself is no other than the instrument of nature, by means whereof she separates the vitiated parts of the blood from the serum."⁴ The use of salicylates prolongs the convalescent period, is lowering to the patient, and likely to result in the inflammation passing on to the suppurative type that needs prolonged treatment possibly of an operative nature after the patient otherwise is well. Pain is the great indication for medication, and a small dose of aspirin may relieve this in a slight case. In the severe type however where pain is acute it is better to be certain of its relief by an injection of morphia, or if it is continuous to keep it under by a mixture given every four to six hours and containing four or five drops of laudanum according to the need.

Locally it is the custom to apply to the mucous membrane of the nose cocaine and adrenaline, or more fashionably to-day ephedrine. I have given these up. I cannot say I have known them to do any harm, but cases do as well without, and I believe they cause the mucous membrane to shrivel but slightly for a short period and to swell the more for the rest of the time intervening before the next application. The only indication for nasal medication is that the patient expects it, and then some mild menthol ointment (0.5 per cent.) placed within the nostril is the best because the least disturbing. So also I have given up washing out the maxillary sinus, it is distressing to the patient. A perfection of anaesthesia cannot be obtained in the inflamed state of the mucous membrane, and I have not found it of value in this acute stage. The removal of the front end of the middle turbinal which I have done in the past I now believe actually to be dangerous. When the patient is in hospital, with the appliance at hand, the use of a light bath to the head seems to be of value if the patient likes it; but if it be objectionable to him it should not be pressed; nor would I have the patient admitted

¹ The Works of Thos. Sydenham, M.D. Edited by George Wallis, M.D. London, 1788, vol. i., p. 209: see also pp. 375, 419, and 422.

² Ibid., vol. i., p. 362.

³ Guy's Hosp. Gaz., June 1929: Post-operative Treatment in Acute Inflammations of the Upper Respiratory Tract.

⁴ Loc. supra cit., vol. i., p. 45: The Continued Fevers of the Years 1661-1664.

especially for this. In his own home which combines the elasticity of movement and rest in the upright position that I have discussed above the patient is best if the nursing is possible that is needed in a severe case.

There remains to be discussed the question of inhalations. These are undoubtedly of value once there has occurred a passage through the nose. It is my practice in hospital to alternate the hot-air bath with a menthol inhalation. I have no evidence that this is better than the older Friar's balsam.

We may then sum up the treatment of acute sinusitis, of which the involvement of the fronto-ethmoidal cells is but a part, by saying that there is no room for surgery and that the medical treatment is the minute attention of a hundred details, many of them of the most homely nature, rather than the exhibition of any specific drug or therapy.

UNDESCENDED OVARIES

BY R. MILNES WALKER, M.S. Lond., F.R.C.S. Eng.
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SINCE I recorded two years ago a case of undescended ovary which presented a number of points not previously noted, the same patient has shown further interesting features, while accounts of two other cases in which the anatomical findings were somewhat similar have been brought to my notice and are briefly reproduced for comparison.

The case already reported¹ was that of a girl of 14 who had never menstruated, but who was admitted with pain in the right iliac fossa of 48 hours' duration.

At operation through a gridiron incision the right ovary was found lying in the right iliac fossa behind the caecum, embedded in a mass of recent blood-clot. A fairly well-developed Fallopian tube was present, but owing to the position of the incision the appendages on the opposite side could not be examined; a note at that time that the uterus was thought to be well developed has now been shown to be erroneous. The ovary was removed with the blood-clot surrounding it. She was normally developed as regards the secondary sexual characteristics, but there was no vaginal orifice, though the labia majora and minora were well formed.

As previously reported, she began to complain of pain on the left side some four months after her operation, stating that this was similar in type to the pain she had for two days before her operation, only on the opposite side. This pain lasted intermittently for three months, and then passed off for more than a year. It did, however, recur, and gradually got more intense, so that eventually, four years after her first operation, it was preventing her from doing her work as a polisher. The pain started as an aching in the left iliac fossa, at first with intermissions of no discomfort, but gradually increasing in intensity and becoming continuous; at no time could any history of monthly periodicity be obtained, but the pain was definitely worse after exercise, and eased to some extent by lying down. There was sometimes a little tenderness internal to the left anterior superior iliac spine, but no swelling could be felt at any time. However, the intensity of the pain made her willing to submit to a second operation.

This operation was performed on July 23rd, 1935, through a midline incision. The uterus was found to be considerably smaller than normal, being only about 4 cm. in vertical measurement, forming a short stump rising out of the floor of the pelvis. Attached to its two cornua were bands running laterally, in folds of peritoneum looking like diminutive broad ligaments, to the lateral walls of the pelvis where they led to fimbriated Fallopian tubes each on a short mesentery. Each tube was therefore represented by a well-formed fimbriated extremity and

an adjacent portion of tube, which gradually contracted into a fibrous band running to the undeveloped uterus. This band had been mistaken at the previous operation for a completely formed tube on the right side.

The left ovary was found in the left iliac fossa, attached without a mesentery to the posterior abdominal wall and lying to the outer side of the descending colon which had a short mesentery; it was situated at the level of the iliac crest, its upper pole being 4 cm. below the lower pole of the kidney. It was spindle-shaped, 5 cm. long and 1.5 cm. broad, the long axis being vertical; blood-vessels entered its upper pole, while from its lower extremity a fibrous cord ran down in the retroperitoneal tissues in the direction of the inguinal canal.

In view of the fact that the ovary was almost certainly the cause of her pain, but was her only functioning one from the point of view of its internal secretion, it was decided to denervate the organ, leaving only its blood-supply. The organ was therefore detached from all its surroundings, leaving only the ovarian artery and a few veins entering its upper pole as its sole attachments. All the connective tissue was then carefully dissected off these vessels for a length of 3 cm. during which process what appeared to be a number of nerve-fibres were divided. The ovary was then returned to its bed in the left iliac fossa, and fixed with a few stitches, partly covered by peritoneum to prevent torsion of its pedicle. As it was thought that the undeveloped uterus might also give rise to pain, the presacral sympathetic nerve-fibres were dissected out and divided. The patient made a rapid recovery and has had no recurrence of her pain, being now back at work four months after the operation.

Evans and Cade² recorded a very similar case, but here the failure of descent was unilateral, and the fimbriated extremity of the tube had remained in contact with the ovary; the patient was a girl of 22 years, with pains in the right side of 18 months' duration. At operation the ovary was lying to the outer side and behind the caecum and close to it was the fimbriated extremity of a tube; the remainder of the tube was absent, and the right side of the uterus was undeveloped, it being of the type described as left unicornis. The left ovary, broad ligament, and tube were normal. The undescended ovary was removed and the pain did not recur.

Another case is recorded by Forbes.³ Here both right and left ovaries were arrested at the level of the fourth lumbar vertebra lying to the outer sides of the caecum and descending colon respectively, and alongside each was the fimbriated extremity of a Fallopian tube. The remainder of the tubes was absent and no trace of a uterus could be found. The patient had had an operation to make an artificial vagina three years before. Her symptoms, at the age of 23, were due to hæmorrhage into the peritoneal cavity, from a small follicular cyst of the right ovary, there being abdominal pain of 24 hours' duration. The hæmorrhage was controlled by a suture and the ovary not removed.

The normal descent of the ovary appears to depend upon the proper development of Müllerian ducts; in Evans and Cade's case there is normal Müllerian formation on the left side, whereas it is lacking on the right with consequent absence of the Fallopian tube, except its upper end, which remains in the vicinity of the ovary. Forbes's case represents complete absence of Müllerian ducts, whereas in Pidcock's case,⁴ referred to in my previous communication, these are present but not fully developed, the uterus being abnormally small but yet capable of menstruation. In my own case the Müllerian ducts are undeveloped, but the fimbriated extremities of the tubes, derived from Kobelt's tubules, have descended considerably further than the ovaries.

The cause of the pain is not always obvious. In Forbes's case and in this case on the right side, the

condition presented acute symptoms which were due to hæmorrhage, but in this one on the left side, as in Evans and Cade's case and in Pidcock's, the cause of the pain is obscure, there being no question of torsion, or of pressure on the organ, which was well developed apart from its position. The fact remains, however, that the organ need not be sacrificed when it gives rise to pain, but that this can be relieved by depriving it of its nerve-supply, carefully preserving the blood-vessels, so that it may continue to maintain its functions as an organ of internal secretion.

Once again I wish to express my thanks to Dr. W. Goldie and Dr. G. W. Campbell for their coöperation in following this patient.

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Clinical and Laboratory Notes

"IDIOPATHIC" STRIÆ ATROPHICÆ OF PUBERTY

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IN my article on "idiopathic" striæ atrophicæ of puberty in THE LANCET of Oct. 19th, 1935, I described a remarkable example of the condition in a healthy girl, aged 13½ years. The striæ, which owing to their bright red colour must have been of fairly recent origin, were transverse and somewhat irregularly situated over her back from the level of the tenth dorsal vertebra downwards. That her rapid growth in height and general development had

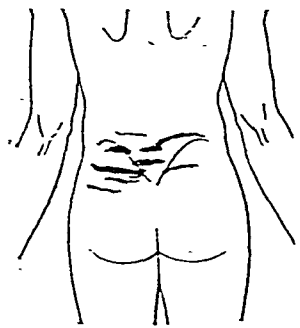


Diagram showing the position of the striæ on the patient's back.

something to do with their onset there could be no doubt. She seemed bodily and mentally developed at least two years beyond her age and had commenced to menstruate at 12 years of age. The presumption was that the striæ would gradually become paler and less conspicuous, and would give rise to no trouble (unless from their appearance).

I have recently seen striæ atrophicæ of very similar distribution in a man, an English park labourer, aged 44 (see Figure). They are limited to the lower (lumbosacral) part of his back and are transversely, somewhat irregularly, distributed, more on the left than on the right side. But they are quite pale, whereas those on the girl's back were red. Obviously they are very old; the patient knew nothing about them and was apparently not even aware of their presence before his recent examination. I can only think that they were connected in some way with rapid growth at puberty. The patient himself came under observation for some totally different complaint, but his history shows that he did indeed develop very rapidly at puberty, for he was permitted to join the army when he was only 15½ years old,

pretending that he was already 18. The two cases (in both of which the Wassermann reaction was negative) do really throw some light on each other and on the development, without any subjective symptoms, of such cases of "idiopathic" striæ atrophicæ of puberty, and also on the prognosis.

Some would prefer to call the condition in both cases "atrophydermia striata (linearis)" by analogy with cases of "atrophydermia (morphœa) guttata," but I believe that the analogy is a false one, though I have heard of a case in which idiopathic cutaneous striæ were combined with idiopathic drop-like atrophy of the skin.

AGRANULOCYTOSIS AFTER TAKING AMIDOPYRIN

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AMIDOPYRIN (Pyramidon) has been incriminated as often causing, or being a factor in the production of, agranulocytosis. Plum¹ gives a record of 128 cases following the taking of amidopyrin in therapeutic doses. He also describes an experiment in which he gave a single dose of 0.2 g. to a patient who had recovered from an attack of agranulocytosis. He took frequent blood counts and found that the white cells were profoundly modified, both with regard to the total number and the distribution between the granular and non-granular cells, for as long as twelve days. In a similar experiment on two patients, Madison and Squier² produced leucopenia and in one of the cases complete disappearance of the granular cells. Adams³ also considers the drug to be a cause of agranulocytosis.

The present report concerns a patient who had been in the habit of taking tablets containing amidopyrin whenever he felt "a cold coming on," and he had been doing this for several years.

He was a man aged 60, and was admitted to hospital with a history of having been ill for five days. His first symptom was aching pains in the limbs followed by a sore-throat which gradually became worse until he was unable to swallow and had difficulty in speaking. On admission his temperature was 102° F. His throat was seen to be covered on both tonsils and on the uvula with a yellowish membrane and discharge. A swab was taken and a film showed *Oidium albicans* and Gram-positive cocci: on culture a growth of *O. albicans* and non-hæmolytic streptococci was obtained. No Vincent's organisms were seen. A blood count showed the following figures: red cells, 4,980,000 per c.mm.; hæmoglobin, 84 per cent.; colour-index, 0.85; white cells, 600 per c.mm.; lymphocytes, 100 per cent.; red blood corpuscles normal in appearance and platelets in normal number. The condition was at once recognised as one of agranulocytosis. The patient died 6½ hours after admission.

At autopsy the fauces and epiglottis were found to be very œdematous and septic. The subcutaneous tissues of the neck were œdematous but there was no pus. Culture of the œdema fluid yielded a pure growth of pneumococcus group 4. There were a few slightly enlarged glands in the neck. The other organs showed no abnormal appearance. By naked-eye examination the bone-marrow in the femur was fatty and that of the vertebrae grey. Sections of the bone-marrow showed an almost complete absence of granular cells but an increase of lymphocytes.

On making inquiries of the relatives they stated that the deceased had felt a cold coming on and had taken some tablets, and a bottle containing 20 of these was handed over. The bottle originally contained 100 tablets and was bought on Sept. 8th. The patient died on Oct. 19th; thus during a period of about five weeks from Sept. 8th to Oct. 19th, 80 tablets had been taken. The tablets were analysed by Dr. Ryffel who found that each contained

32 per cent. of amidopyrin or about $1\frac{1}{2}$ grains. He also extracted 30 grammes of liver and after evaporation obtained a small quantity of needle-shaped crystals consisting of a basic substance analogous to amidopyrin, from which it may be inferred that this drug had been taken in considerable amount.

I wish to express my thanks to Dr. W. R. M. Turtle, St. Mary Islington Hospital, for allowing me to publish this case, to Dr. J. H. Ryffel, Guy's Hospital, for supplying me with the results of his analysis, and to Mr. Bentley Purchase, H.M. coroner, for the use of his notes.

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A CASE OF

ASTHMA SENSITIVITY TO CHROMATES

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THE toxic effects of chromate compounds were first experimentally produced by Gmelin¹ in 1824. In industry they have been recognised for more than a century,^{2,3} but there is little mention of any respiratory complications in the literature. Delpech and Hilaret⁴ noted the occurrence of what appears to be asthma in four cases. These workers were subjected to a variety of risk and were not of course shown to be specifically sensitive to chromates. Legge⁵ mentions a case. The published records have recently been reviewed by A. R. Smith,⁶ who notes mention of this complication by Wutzdorff and Lehmann. Smith's case was of general chrome poisoning with associated asthma in a man with many previous attacks of asthma and hay-fever. The asthma was not a prominent symptom. Recently, Joules⁷ produced an asthmatic attack in his case by the intradermal injection of potassium dichromate.

The following case of a woman who appeared to be sensitive to chromates may be not without interest.

CASE RECORD

In February, 1935, Mrs. A., aged 28, was admitted to the Hammersmith Hospital complaining of dyspnoea and cough for two months. She came of healthy parents who showed no history of allergic disease. The patient had previously had no asthma, hay-fever, urticaria, or eczema.

History.—For some years previously she had worked in a pickle works and in a sweet-making factory without suffering from any skin complaint. For the eight months before her illness she had worked in a chromium-plating factory as a polisher. Her work consisted of polishing nickel- or chromium-plated articles with either a lime powder or "compo" spread on a revolving brush. The "compo" used was either green or white. The former is chromium oxide in a basis of stearine, while the latter is fused alumina in the same basis. Polishing and plating took place in the same room so that she was in addition exposed to the fumes from the plating tanks. The atmosphere was excessively dusty. No gloves, respirators, or any protective clothing were worn. An exhaust fan adjacent to the polishing brush, according to the patient, was ineffective.

Five months after starting work and three months before admission she noticed a cough which got slowly worse. This was accompanied by increasing dyspnoea and some frothy mucoid sputum. She had no hæmoptysis.

She had been first admitted to the hospital some three weeks earlier, but after a week in bed her symptoms had disappeared and she discharged herself for fear of losing her employment. Two months before admission a rash started on her neck and had since spread to her face and upper eyelids and to the upper part of her chest.

On admission she was slightly dyspnoeic at rest, and examination of her chest showed rhonchi all over both lungs. Both pupils were sluggish to light. The remainder of the physical examination was normal. The urine contained nothing abnormal. Her skin was seborrhœic with some hyperidrosis of the palms and axillæ. There was a chronic eczematous rash over the neck, chest, and arms. In the neck and on the back of the hands there were patches of lichenification. Her nose and throat were examined and were reported normal with no ulceration but some slight crusting. A radiogram of her chest was reported on by Dr. Duncan White: "the appearances in the lungs are those of chronic bronchial catarrh."

Treatment.—The skin condition was treated with calamine lotion and then with Lassar's paste and coal tar. After a fortnight in bed the skin condition had cleared except for some of the more chronic patches. Her dyspnoea had ceased and clinically her condition was normal.

Tests of Sensitivity.—It was then decided to test her skin sensitivity to chromates. For this purpose two solutions were made up: 4 per cent. potassium dichromate and 1 in 1000 acriflavine, which matched the colour, as a control. 0.1 c.cm. of the dichromate solution was injected intradermally into one forearm and 0.1 c.cm. of the control into the other at 8 p.m. At 10.30 p.m. she had a severe attack of asthma which woke her up. She was seen in a typical attack, leaning forward, weeping, and gasping for breath. Her breathing was laboured and there were audible rhonchi. She was rapidly eased by the injection of adrenaline. Twelve hours later she complained of an irritating rash. The rash consisted of small erythematous papules aggregated into patches on the neck, shoulders, chest, and to a slight extent on the back, abdomen, and forearms. It was most marked in the areas previously attacked by the rash. There was some œdema of the eyelids of which she had previously complained. In 36 hours the asthmatic attack had almost disappeared and the rash had improved. Similar injections in a control produced no effect. Beyond some increased erythema, there were no definite local reactions to the injection.

Patch tests using the various finishing powders employed in her work were applied to the leg, "limestone," "green compo," "white compo," and boric acid to act as a control using the technique described by Bray.⁸ There was a slight reaction to "limestone." Dr. Sibyl Horner, of the Home Office, who kindly saw this patient, was of the opinion, on clinical grounds, that the rash was a lime dermatitis. Patch tests on a control were negative. Four days later 0.1 c.cm. of 1 in 1000 acriflavine was injected intradermally into the forearm. There was no effect, though the patient anxiously waited for an asthmatic attack.

It is generally recognised that the chromates are far less active than the dichromates. Her reaction to chromates was tested, two days later, by the intradermal injection of 0.1 c.cm. of 4 per cent. potassium chromate. Five hours after the injection the patient woke up in a severe asthmatic attack which was eased by the administration of adrenaline. Sputum taken during this attack showed numerous eosinophils. Rhonchi were still present in the chest 36 hours after the attack.

Experimentally chromates can be absorbed from the stomach though symptoms of general intoxication in chromium-workers are very rare save after massive exposure. An attempt was therefore made to provoke an attack by the administration of potassium dichromate given orally. The doses used were $\frac{1}{5}$, $\frac{2}{5}$, and $\frac{3}{5}$ grain, given on successive days in her food. No effect at all was observed. She was further tested for sensitisation to general proteins by scarification in the usual way. All gave negative results except for a slight reaction to "fungi." In the summer she suffers from epidermophytosis. She was discharged free from symptoms and advised not to seek re-employment as a worker in this

factory. Despite this advice she returned to the same work. Her symptoms immediately recurred. She has since obtained other employment and has been entirely free from asthma for six months.

SUMMARY

(1) A patient, with no previous allergic history suffered from asthma after five months' exposure to the fumes and dust of a chromium-plating factory. (2) The asthma rapidly cleared up after a week in hospital. (3) The symptoms recurred on returning to work but disappeared on readmission to hospital. (4) An attack was provoked by the injection of 0.004 g. of potassium dichromate. A further attack was provoked by the injection of 0.004 g. of potassium chromate. (5) Except for a slight attack requiring no treatment, no asthmatic symptoms occurred in hospital other than those produced artificially.

(6) No reaction to oral administration was noted. No skin reaction to the ordinary protein groups was obtained. (7) Since she obtained other employment there have been no further attacks. (8) The course of the disease suggests that the patient was asthma-sensitive to chromates.

I am grateful to the medical officer of the London County Council, and to Prof. F. R. Fraser for permission to publish this case.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF LARYNGOLOGY

At a meeting of this section, held on Dec. 6th, with Mr. LIONEL COLLEDGE, the president, in the chair, a discussion took place on

Acute Frontal Sinusitis

Mr. F. HOLT DIGGLE (Manchester) began by speaking of the seriousness of this condition with its risk of septicæmia, osteomyelitis, or intracranial extension. Such complications might follow conservative treatment, if unduly prolonged, or might result from precipitate surgery. He was sure the virulence of this type of infection had increased in the last few years. Clinically the condition became manifest by pain and tenderness over the anterior wall and/or floor of the frontal sinus, with or without œdema of the overlying soft parts or orbital tissues; the duration was a few days or a few weeks, and there might be a homolateral maxillary sinus infection. In diagnosis radiography was usually of great assistance, though occasionally misleading, but he placed no reliance on transillumination of the frontal sinus. For purposes of discussion the cases could be classed as pyrexial and apyrexial; he preferred this distinction to catarrhal and suppurative. The two commonest types of infection met with were those due to *Streptococcus pyogenes* and *Staphylococcus aureus*, and there should always be a bacteriological examination, so that, if required, the right kind of serum might be used. In carrying out conservative treatment he kept the patient semirecumbent and applied heat externally; warm mentholated vapours were inhaled, and astringents such as ephedrine and adrenaline, or a 5 per cent. solution of cocaine hydrochloride and adrenaline (1 in 1000) in equal parts were applied to the ethmoidal region either with the spray or a cotton-tipped probe. Forty per cent. of his cases had recovered completely under this treatment, but they were all subacute. In this apyrexial group, if the frontal headache and the tenderness were gradually subsiding under conservative treatment, surgical drainage was not needed. It was called for, however, if symptoms increased. In severe cases with fever hasty surgical treatment could be disastrous. The blood infection or toxæmia should be countered by appropriate antiserum at an early stage, especially as the sinusitis might prove to be only a local manifestation of septicæmia. Surgical

drainage was called for, he thought, if there was a pulsating headache, with increasing tenderness, and the condition was not responding to serum therapy and general conservative measures.

In apyrexial types, when conservative measures had failed, Mr. Diggle straightened a grossly deflected nasal septum, and removed a hypertrophied or cystic middle turbinate; the anterior ethmoidal cells were removed so that he could gently catheterise the frontal sinus, but he never used a frontal raspatory. If there was an actual external abscess, or if œdema and tenderness did not subside a day or two after intranasal drainage, he would resort to external drainage. In the toxic pyrexial group he would not adopt any form of intranasal drainage nor resect the nasal septum, nor remove part of a middle turbinate. If conservative treatment failed, he preferred external drainage, making the usual curved incision below the eyebrow, and passing on to the nasal bone. After elevating the soft parts so as to expose the inner part of the frontal sinus floor, he opened the sinus through its floor just above the nasal ostium. This opened any external abscess. He never syringed or mopped out the sinus contents. Before inserting a drain, which best took the form of rubber dam tissue, he smeared the bony edges with pure carbolic acid; this seemed to lessen the risk of osteomyelitis. After lightly smearing the soft parts with thin bipp the outer edges of the wound were brought together with stitches, and the rubber drain was anchored to the lower nasal end of the incision, being removed at the 10th-14th day, by which time the discharge was usually mucoid. Those who believed that a suppurative frontal sinusitis was always associated with suppuration in the ethmoidal cells would probably doubt the wisdom of a simple external frontal drainage without removal of the ethmoidal cells; but did such association always exist? Inspection of those cells, in acute cases, was of no help, and a skiagram might not assist. But if the patient had œdema of both upper and lower eyelids, with possibly some proptosis or ocular displacement—signs of severe ethmoidal involvement—there was no alternative to surgical removal of the ethmoidal cells. The prognosis in such cases was very grave. The coexistence of homolateral maxillary sinus infection did not materially alter the frontal sinusitis measures, except that the ethmoidal œdema hindered frontal drainage. The antrum should always be aspirated, if only to relieve the ethmoidal œdema and promote frontal drainage.

Mr. T. E. CAWTHORNE thought there was an increasing tendency towards conservative measures, because a large majority of the acute cases cleared up under such treatment, and because extensive surgical procedures on the frontal and ethmoid sinuses, at a time before barriers had been established against infection, might start a spreading osteomyelitis, meningitis, or even cavernous sinus thrombosis. The definition of "conservative treatment" depended a good deal on individual taste and temperament; some would consider puncture and lavage of an antrum full of pus in the acute stage as on the rash side, while others thought that a limited opening of the floor of the frontal sinus in acute suppuration was the essence of caution.

Sinus trouble usually followed a cold or was a result of bathing while suffering from nasal infection. He did not know whether it was the maxillary antrum or the anterior ethmoids that were mainly responsible for the spread of infection to the frontal sinus, but suppuration in the ethmoids or antrum was almost always an accompaniment, and it was towards the antrum that one's efforts should be directed. The amount of drainage afforded to the infected frontal sinus would depend on the degree of obstruction of the frontonasal duct. If that obstruction was complete, the pus in the sinus might cause a periostitis, usually in the thin floor, and this would produce some external swelling. Failing relief the pus might spread from the frontal sinus to the neighbouring regions, and, left to itself, would usually follow the line of least resistance and burst through the thin floor to invade the orbit. This was the least dangerous route for it to take. If sufficient drainage could be secured to prevent the retention of pus in the frontal sinus under pressure, any external swelling would subside. Some surgeons believed that complications developing after operations done during the acute stage did so despite the operation; but it was significant that they nearly always appeared, or were discovered, a few days after operation. He had not, so far, seen one of the serious complications develop because an external operation had not been performed. Unless pus had evidently escaped from the frontal sinus into the surrounding tissues, conservative measures should be given a thorough trial before any form of external operation was even considered. Such measures should include steam inhalations, antrum puncture, and lavage (if necessary daily). Removal of any pus from the antrum was of the greatest importance, and he punctured the antrum as a routine, seldom finding it free from infection. In young patients and those unable to tolerate repeated antrum puncture it was permissible to make a limited opening into the antrum through the inferior meatus, large enough to admit a cannula; also shrinking solutions should be applied to the middle meatus and the turbinal. Probably 10 per cent. Protargol was the safest solution, and though sometimes it was necessary to precede its use by a pack moistened with a 10 per cent. solution of cocaine, this should be avoided when possible because of the after-dilatation it produced. Hot fomentations externally, electrically heated pads, or a light-bath might prove of value. Sometimes a catheter could be passed into the frontal sinus, and the pus could be removed by either lavage or suction. Sometimes normal drainage could be assisted by inward displacement or infraction of the middle turbinal. He did not usually favour removal of the anterior end of the middle turbinal, largely because of the reactionary swelling of the mucous membrane around the frontonasal duct. If after ten days the

condition remained stationary, or if there was reason to suppose that pus had spread beyond the frontal sinus, some kind of external operation would be needed, its extent being determined by the extent of the disease. Unless, however, the disease had attacked the diploë of the frontal bone or the meninges, operation should be restricted to a small opening in the floor of the frontal sinus. After the acute symptoms had subsided it was usually necessary to enlarge the frontonasal duct and exenterate any diseased ethmoidal cells encountered.

Mr. WALTER HOWARTH said he did not quite follow Mr. Diggle's separation of cases into pyrexial and apyrexial; very many of the cases showed some pyrexia, its amount depending on the virulence of the infection and the degree of blockage of the frontonasal duct. He was in close sympathy with Mr. Cawthorne's advocacy of conservatism, and he thought Mr. Diggle's figure of 40 per cent. cures by this treatment was low; his own estimate would be double that figure. He also thought that if surgery were withheld longer than was now customary, an even larger proportion would be cured without it. In his clinic very few of the large number of frontal sinus cases seen were operated upon. He did not even believe in the removal of the anterior end of the middle turbinate, though in cases where blockage was complete an attempt should be made to enter the frontonasal duct. He thought it probable that the patients who developed frontal sinusitis had some anatomical abnormality or curious configuration of the duct. Even cases showing much oedema of eyelids often settled down without operation.

Mr. C. A. SCOTT RIDOUT (Portsmouth) emphasised his belief in conservative methods by narrating a case in which the anterior part of the middle turbinal was removed and the patient died from meningitis. He had more faith than Mr. Cawthorne in packs soaked with cocaine; it was seldom that packing and repacking the nose with 10 per cent. solution of cocaine did not produce relief. But there were cases in which one dared not try to get into the sinus because of the obstruction of the septum; the patient was in great pain, and an external incision had to be made to let out pus which was under pressure. He agreed that the radiographic indications were often uncertain.

Mr. HAROLD KISCH welcomed the wave of conservatism and said that at the Central London Ear and Throat Hospital almost none of the frontal sinus cases were operated on. Lavage of the antrum was always carried out, and he regarded it as very important. Though most of the cases were not operated on until the acute condition had settled down, the mortality was not at all high. In one case of osteomyelitis of the frontal bone complicating frontal sinusitis, intensive X rays had stopped the osteomyelitis from spreading, and later, when the sinus was opened, all suppuration had ceased. He thought that small doses of intensive X rays might well be used in some cases.

Mr. T. B. LAYTON said his conservatism went even further than that of the other speakers, for he now neither washed out the antrum nor removed the front end of the middle turbinate. If acute frontal sinusitis was left alone he doubted whether it ever led to septicæmia, osteomyelitis, or meningitis. Anatomically there was no such thing as a frontal sinusitis; the frontal sinus was merely one of a group of anterior ethmoidal cells, all of which grew up towards the angle where the bones of the cranial and nasal cavity met.

Mr. E. MUSGRAVE WOODMAN (Birmingham) disagreed with Mr. Layton, and related a case in which acute head pains, photophobia, and joint involvement were the leading symptoms, and streptococci were grown from the blood; this was clearly a case of acute frontal sinusitis. He held that 90-95 per cent. of cases would clear up on local treatment only.

Mr. LESLIE POWELL (Reading) said that during twenty years he had not operated on a case of acute frontal sinusitis; but recently he had two cases in three weeks of a type not previously encountered—i.e., with a large abscess high up in the centre of the forehead, both frontal sinuses being affected. There had been no cold, and no pus was coming from the nose. He removed all the soft bone he could find, but did not touch the posterior wall. In the first of the two cases he had to explore further, as there was paralysis of the arm and leg on the right side. Pus was coming away from between the meninges and the cortex. The patient died, and a band of thick pus was found passing round the cerebral hemisphere to the occiput.

Dr. W. A. TROUP said that for acute cases he believed in radiotherapy, which was not used in this country nearly as much as in America and on the continent.

Mr. H. G. DOWNER (Hove) spoke as a sufferer from acute frontal sinusitis. His relief came not so much from the use of inhalations as from the employment of the steam tent. Submucous resection had saved the onset of further trouble.

Mr. E. D. D. DAVIS said that in his clinic conservative treatment was adopted wherever possible, but there were cases which operation certainly helped. Sometimes one's hand was forced, especially where the patient had had a previous attack—a thing which always made the speaker anxious. When there was a bulging swelling, and no sleep could be procured, he did not see why a limited middle turbinectomy should not be performed, in order to reach the frontonasal duct. And an orbital abscess could not be left with safety; drainage was needed.

Mr. V. E. NEGUS said he had always washed out the antrum in these cases, which cleared the natural ostium. Some certainly required an external incision.

Mr. J. B. HORGAN (Cork) said he was able to produce a very prolonged astringent effect by using 1 grain of ephedrine with grs. $17\frac{1}{2}$ of cocaine in an ounce of olive oil, with the head in a prone position.

SECTIONS OF THERAPEUTICS AND MEDICINE

At a joint meeting of these two sections held on Dec. 10th, the chair was taken by Dr. DOROTHY HARE, president of the section of therapeutics and pharmacology, and a discussion on

Agranulocytosis

was opened by Prof. L. J. WITTS. The subject, he said, was ripe for discussion in this country. In reports published in the current issues of *The Lancet* and *British Medical Journal* it was stated that sepsis could by itself gravely reduce the number of white cells; that in agranulocytosis these were entirely absent; that 2 or 3 grains of Pyramidon (amidopyrin) could not produce the condition; and that there was always an exudate on the tonsils and red urine. All those statements were, he thought, open to question. He reported seven cases; five of the patients had taken pyramidon and one salol. The illness of the first (a doctor's wife) had been chronic and recovery had followed treatment. The second patient (a surgeon) having taken salol for colitis had complained of exhaustion and had shown 1600 white

cells and 912 granulocytes; he too recovered. The third patient was also a doctor's wife. She had developed an apical abscess after overwork and had taken Veramon and Allonal and been seriously ill with ulceration of the fauces and massive Ludwig's angina, with only 100 granulocytes. She had recovered. The fourth patient had suffered from rheumatoid arthritis and no inquiry about drugs had been made; the leucopenia had been discovered by chance. All these patients had been treated with nucleotide. The condition seemed to affect doctors' families—probably because they took the samples of new drugs. The fifth patient had taken Yeast-Vite, then containing pyramidon, for depression after the loss of her child. She had become worse and developed a septic socket after extraction, a quinsy, and an ulcerated throat. Under symptomatic treatment for the throat she had begun to recover, and then the leucopenia had been discovered. Pentnucleotide had had no effect on her white cells, but these had risen after—probably not because of—injections of Campolon. The sixth patient had taken yeast-vite for pyelitis. Her count had been 1200 white cells. No specific treatment had been given and she had shown spontaneous remission with great outpouring of white cells. She had been unable to tolerate pentnucleotide (tried later), and had been given large doses of liver without benefit. The leucopenia had lasted some time. Complete recovery took months. The seventh patient had come for investigation after hæmoptysis, but leucopenia alone had been found (300 polymorphonuclear leucocytes). She had taken Cachets Faivre for migraine every three weeks for about four years. She had seemed quite fit. Pentnucleotide had made her ill: fever of 102° F., collapse, and aphasia. She had remained stuporose until her death. She had been given massive doses of campolon but had developed an ulcerated throat and complete agranulocytosis. At autopsy there had been a thick greenish exudate over tonsils, pharynx, and œsophagus, and focal lymphocytic infiltration of the bone-marrow, in which no granulocytes could be found. The pathological changes suggested arrest in maturation of the myeloblasts comparable with the megaloblastic degeneration of pernicious anaemia. In animals pyramidon caused changes in the marrow though not complete agranulocytosis; the subjects could not produce leucocytosis when stimulated. Direct incrimination of pyramidon had now been secured by giving test doses, which produced leucopenia, malaise, and sore-throat. Other drugs also caused the disease, and pyramidon could be taken by some people without ill-effects. Nevertheless, pyramidon was the chief cause of agranulocytosis. Liver extract, X rays, transfusion, leucocytic stimulants, and pentnucleotide had been used in treatment, but all appeared to be ineffective. There was some basis for X ray and nucleotide therapy, but in practice the results were disappointing. One reason for the failure of pentnucleotide was insufficient dosage and another was the appearance of troublesome reactions. The time had come for pyramidon to be regarded as a dangerous drug and treated accordingly.

Sir WILLIAM WILLCOX said that the leucopenia seemed to be due to defect of the bone-marrow. No definite cause might be ascertainable, or some probable cause might be found. It was commonest in females from 40 to 50, but no age was exempt. Nutritional features might play a more important part than was at present recognised. The enteric group of bacteria were associated with diminution

of granular leucocytes; in the days when typhoid was much more severe, a membrane might be found in the throat and extending down œsophagus and trachea. Other bacterial invasions might also cause agranulocytosis, notably chronic dental infections. Other conditions sometimes associated with diminution of the granular leucocytes were tuberculosis, virus diseases, and protozoal infections. Various drugs had been accused. Pyramidon had been very largely used. Sir William had frequently prescribed it and had never seen agranulocytosis associated with it. There must be an allergy in connexion with it. To say that the majority of cases were due to pyramidon was going rather too far. Barbiturates seemed to have a deadly effect on the white cells. Many toxic drugs could "knock out" the bone-marrow. Physical causes included exposure to X rays, radium, and mesothorium, anaphylaxis and shock, and achylia. In considering ætiology it was important to distinguish between post hoc and propter hoc; there was an enormous amount of drugging going on to-day. A careful consideration of all the factors possibly concerned was evidently necessary.

Sir William described three cases. In the first, a careful dental extraction had been followed by illness, a membrane requiring tracheotomy, and a fatal agranulocytosis. The second had been suffering from boils for a year; he had developed acute illness and then, after half a dozen cachets containing amidopyrin, he had shown complete agranulocytosis. He had recovered. The third case had been one of toxic fibrositis with parotid abscess and acute fatal staphylococcal septicæmia. For operation on the gland she had had Evipan, and she had about a grain of pyramidon three weeks before death.

Dr. E. C. WARNER said that the failure might be at one of three stages: failure to produce myeloblasts; failure to transform them into myelocytes; or failure to transform myelocytes into granulocytes. The first was invariably, and the second often, fatal. Sternal biopsy was the only way of determining which was present during life. In chronic and relapsing cases the third process was probably present; in many of these there was no history of drugs. In one reported case the agranulocytosis had been shown repeatedly to precede the symptoms. Apart from the oral conditions, the most characteristic feature was weakness, exhaustion, and fatigue. Any relapse might prove fatal, but the prognosis of the chronic and relapsing case was much better than in acute fulminating cases. Exhaustion must be treated, and exposure to any infection must be scrupulously avoided, as must also operation of any kind. The mouth must be treated, and pentnucleotide could be given. Minot had recommended vitamin B. A patient recently seen by Dr. Warner—also a doctor's wife—had previously been suspected of having tuberculosis. She had had a long period of worry and suffered from low backache, colic, poor appetite, diarrhœa, vomiting and migraine at times, loss of weight, and fits of depression. She had had aspirin, veramon, alonal, and phenacetin and caffeine. Later she had shown fever and inflammation around two teeth, without pus. A blood count had revealed 1700 white cells and no granulocytes. After nine weeks' treatment with pentnucleotide, to which she showed good reaction, she recovered completely. Within 18 hours of beginning treatment there had been a marked rise in the white cell count, and a still more striking response was obtained when the dose of pentnucleotide was doubled.

Dr. J. D. ROLLESTON said he had taken a great interest in the disease since its description in 1924, but had had very few cases sent to his fever hospital. Before diphtheria had been differentiated in the nineteenth century, many forms of "gangrenous angina" had probably been diphtheria. Pyramidon had been recommended almost as a specific for measles.

Sir KENNETH GOADBY thought that the exciting cause was not yet very clear, and might be one of many things. He recalled the time when pernicious anæmia had always been ascribed to oral sepsis. Probably agranulocytosis was due to a specific factor. Leucopenia should be looked at very much as the temperature chart was. In a case he had recently published there had been six very severe attacks, each following languor and drowsiness associated with leucopenia and reduced granulocyte count. Mouth symptoms had been late in appearing and the sloughing had been quite different from that of Vincent's angina: a hard leathery slough penetrating deeply into the tissues and without a clear red edge. Two other varieties of nucleotide had been tried, without any benefit, but pentnucleotide had at once caused improvement. The patient, a large florid woman, had lost no weight and had recovered. Only in the later attacks had she developed meningeal symptoms. There had been no history of drugs, but there had been a syndrome highly suggestive of paratyphoid, and on each occasion she had had enlargement of the spleen.

Dr. HERBERT BROWN referred to an analysis of fourteen recorded cases. Only three had recovered; and only three had been attributable to amidopyrin. In the majority there had been a history of sepsis and diagnosis had only been made at a late stage. Sepsis was generally nasal, oral, or pharyngeal. Experimental work had shown that prolonged absorption of toxins in rabbits had little effect, except that of *Streptococcus viridans* which had caused rapid fatal acute granulocytopenia.

Dr. S. W. PATTERSON said that 472 cases had been studied by one observer with a view to investigating the disrupted masses called by American workers "smudges." He showed an analysis of the results. The percentage of cells disrupted varied from 9 to 33, the highest figures being found in splenomedullary leukemia, fibrositis, and a patient who had taken yeast for years. One fibrositic patient had had 3900 white cells, 20.8 per cent. disrupted. After severe exercise his count had dropped below 2000, with 26 per cent. disrupted. Behind the other ætiological factors suggested there might be some hypoplasia of the myeloid structures producing fragility of the cells.

Dr. C. W. J. BRASHER thought that potassium chlorate was useless as an oxidising agent without a strong acid and the potassium might produce anæmia.

Dr. G. L. KONSTAM spoke of an obese female patient recently sent to a fever hospital as a case of diphtheria. She had no granulocytes and a white cell count of 1000. These cases might be found more often in fever hospitals if sought as a routine. She had had dyspnœa and was obviously going to die. Another fatal case had had a hæmorrhagic discharge from his rectum.

NEW WING AT SCUNTHORPE WAR MEMORIAL HOSPITAL.—The new Jubilee block, which was lately opened at this hospital, contains five new wards and cost £15,000. Work will soon be started on a new and larger out-patients' department to meet the growing needs of the district.

REVIEWS AND NOTICES OF BOOKS

Mentality and the Criminal Law

By O. C. M. DAVIS, M.D., D.Sc., Head of the Department of Forensic Medicine in the University of Bristol; and F. A. WILSHIRE, of the Middle Temple, Barrister-at-Law. Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall Ltd. 1935. Pp. 168. 5s.

A DOCTOR would naturally expect that any symptom of insanity would be allowed to justify exemption from criminal responsibility. The legal view is that a man may exhibit many symptoms of insanity and yet may not come within the requirements of such exemption. Here is a broad distinction between the medical and the legal aspects which is well brought out in the book before us, a handy summary written by collaborators who combine the qualifications of both professions. The little book is intended for students and practitioners of law who have no time to dig deeper. There are chapters *inter alia* on drunkenness and irresistible impulse, there is an adequate statement of the terms and the significance of the Rules in *McNaghten's* case, and there is sound advice on advocacy in defences where questions of mental instability arise. In this latter connexion the writers refer to the not infrequent dilemma of the advocate who has to decide between attempting to obtain a verdict of "guilty but insane" or relying on the plea of absence of capacity to form intent. Another problem is occasioned by the inclination of juries to return a verdict of insanity rather than one which involves the death sentence. A judge may set himself to counteract this supposed tendency. Is it better, asked Lord Hewart of the jury in *R. v. Anderson* at Sussex Assizes last March, that a guilty man, if he be guilty, should be punished, or that a sane man, on a false allegation of insanity, should be detained for a long time in a criminal lunatic asylum?

The style of the book is uneven, as may easily happen where two authors collaborate; but the diligent reader will be equipped for forensic emergencies and may be stimulated to pursue his studies elsewhere at his leisure. As law students may grow into judges or legislators, a volume of this kind, which sketches criminal responsibility both from the legal and the medical standpoint, may hasten the day when the views of the two professions of law and medicine will more nearly coincide.

Manson's Tropical Diseases

A Manual of the Diseases of Warm Climates. Tenth edition. Edited by PHILIP H. MANSON-BAHR, D.S.O., M.D., F.R.C.P. London: Cassell and Co., Ltd. 1935. Pp. 1003. 31s. 6d.

SIX years ago when the ninth edition of this manual appeared we remarked that it was indispensable for any who wished to acquire or retain an adequate knowledge of disease in all parts of the British Commonwealth and that tropical medicine is under no little debt to the author for the unremitting industry and vigilance which its compilation has entailed. The tenth edition increases the reader's indebtedness, for the book has been expanded on the clinical side while the classification of tropical diseases has been put on a more natural and ætiological basis. This has meant cutting out much of the medical zoology which can be read elsewhere; Dr. Manson-Bahr indeed expresses his relief that

it is no longer necessary for him to poach on ground that has been efficiently treated elsewhere. In this volume he acknowledges the help of Dr. C. M. Wenyon, Prof. R. T. Leiper, Dr. Marshall Findlay, Major E. E. Austen, Prof. M. A. C. Hinton, and Dr. Russell Amies in various branches; on the pharmaceutical side the text has been revised by Mr. Bernard Smith. The result is a volume only some 8 per cent. larger than its predecessor and still within the reasonable bounds of a handy and practical text-book.

Brain Preparations

By Means of Defibrillation or Blunt Dissection. A Guide to the Macroscopic Study of the Brain. By Dr. J. WILH. HULTKRANTZ, Professor of Anatomy, University of Uppsala, Sweden. Translated from the first German edition by HERBERT J. WILKINSON, Professor of Anatomy, University of Adelaide, Australia. London: William Heinemann (Medical Books) Ltd. 1935. Pp. 48. 10s. 6d.

THE method of blunt dissection or defibrillation as applied to the study of the brain has long been practised at the Anatomical Institute, Uppsala, in the teaching of students. Prof. Hultkrantz has here briefly described the procedure with the help of a series of excellent photographs of dissections obtained. Prof. Wilkinson, the translator, was sufficiently impressed by what he saw on a visit to Uppsala to introduce the method in his own department of anatomy. Only the more careful and patient student who has a preliminary knowledge of the topography of the brain will get much out of this technique, but to those who possess these qualifications it offers a far better means of demonstrating structure than any series of sections can afford. It might be used effectively for museum preparations as well as in the dissecting-room.

Sex

By KENNETH WALKER, M.A., F.R.C.S. London: John Lane, The Bodley Head. 1935. Pp. 130. 3s. 6d.

THIS small book, written primarily for a lay public, contains an unusual mixture of scientific and mystical thought. Mr. Walker is particularly concerned with sex and its environment in the twentieth century. Two of his main sources of information and inspiration are Havelock Ellis and P. D. Ouspinsky, and his theme would appear to be that man's troubles are the result of what man is and his one hope of setting right a disordered world lies in an attempt to change not only his circumstances but himself.

First he discusses very briefly the biological and psychological aspects of sex. He goes on to survey the place of sex in occult and religious systems and points out how far removed are the modern views of sex from those originally held in these systems. For example, the early Christians accepted asceticism with its sublimation of sex as a means to an end, whereas their successors are often disposed to regard the giving up of sex as an end in itself. In discussing abnormalities he prefers to use the word "deviation" rather than "perversion," since the latter word tends to imply guilt. While upholding the institution of marriage and the family as the fundamental unit of society, Mr. Walker has much to say against our present laws and social customs with regard to sex

and marriage, and insists that readjustments must come. In the section on contraception he seems to infer that in England instruction in birth control can only be given surreptitiously even to patients needing it on medical grounds. This state of affairs has been changed as far as the public health services are concerned since the issue of the Ministry of Health's permissive memorandum some five years ago, and voluntary clinics where advice on birth control can be openly obtained have been in existence for as long as fifteen years. Mr. Walker's tolerant views on sex before marriage, and on the satisfaction of the sexual and maternal needs of those members of the community for whom marriage is impossible are worth consideration, especially from those who regard the standards of the younger generation difficult to understand.

Modern Treatment of Burns and Scalds

By PHILIP H. MITCHNER, M.D., M.S. Lond., F.R.C.S. Eng., Hon. Surgeon to H.M. The King; Surgeon and Lecturer in Surgery, St. Thomas's Hospital. London: Baillière, Tindall and Cox. 1935. Pp. 64. 5s.

THIS little book is an amplification of a Hunterian lecture delivered in 1933, and in it Mr. Mitchner sets forth in the clearest terms how burns of all varieties should be treated. A sharp distinction is drawn between burns and scalds, since the prognosis of the former is so much more grave; practical hints are given on the management of burns resulting from special agents such as electricity, tar, cordite, petrol, phosgene, and mustard gas. The author brings forward statistical evidence to show how the mortality-rate from burns and scalds may be reduced to a tenth or less by abandoning methods of treatment which have nothing but tradition to support them, and adopting in every detail the correct application of a 2 per cent. solution of tannic acid in water. The virtues of this solution are explained on theoretical grounds, but it is pointed out that unless the burnt area is properly attended to before and after the application of tannic acid the best results cannot be attained. No practitioner can fail to obtain help from the practical advice which this book provides. So simply is it written and so clearly illustrated that it may also guide those responsible for the organisation of first aid in industrial establishments.

Heredity and Evolution

By A. E. WATKINS, M.A., University Lecturer in Genetics and Cytology, Cambridge. London: John Murray. 1935. Pp. 243. 7s. 6d.

It would be an interesting exercise for the student of biology to read the "Origin of Species" and then Mr. Watkins's book (which might as well have been called by the same title) and to make a précis of the differences and similarities. The main difference in general outlook is that Darwin came at his subject as an observant naturalist while Mr. Watkins is an analytical experimentalist; the main similarity is that both are concerned to discover the mechanism of an evolution which has resulted in the great bulk of the live world being cut up into obvious groups which we call species. Mr. Watkins gives a clear account of the coöperation between experimental breeding and cytology which has been so fruitful these last 30 years, and, recognising difficulties and uncertainties, he evidently inclines to the view that the discontinuous variation studied by Mendel is at the bottom of what Darwin thought came more

gradually. As he points out, changes in genes and especially in their grouping and frequency are known to provide a degree of variability which seems adequate for the play of natural selection and for the production of discrete species. He makes no attempt to discuss the cause as apart from the mechanism of evolution; perhaps, like other modern biologists, he does not distinguish between them and holds that results are determined by means. Hence he rejects Lamarckism in a sentence and makes no mention of the predestination to which the work of such men as Osborn and Broom brought them. His field therefore is rather limited but within it his book should be of use. It has the great advantage of being tempered to the layman's understanding.

An Introduction to Human Anatomy

By CLYDE MARSHALL, M.D., Department of Anatomy, School of Medicine, Yale University. London: W. B. Saunders Co., Ltd. 1935. Pp. 385. 10s. 6d.

THIS small volume is one of the most pleasing books on elementary anatomy that we have seen for some time. Dr. Marshall has set out to interest the junior student, entering a bewildering field of vast extent, and to supply him with connected ideas admitting of expansion as his information grows and deepens. It seems to us that he has done this very well. The order of presentation of his subjects is a commendable variation of that usually employed, and his descriptive work is excellent. The illustrations are of a high order, as may be imagined when it is stated that the muscles are largely illustrated by the exquisite drawings in Braus's "Anatomie"; they lack, of course, the delicate colouring of the originals, but the beauty of the fine line work is well reproduced. Dr. Marshall is to be congratulated on the appearance of so useful and accurate a work.

Tonsils and Naso-pharyngeal Sepsis

By E. A. PETERS, M.D. Cantab., F.R.C.S. Eng., Consulting Surgeon, Royal Ear Hospital (University College Hospital). London: Baillière, Tindall and Cox. 1935. Pp. 92. 5s.

IN this little book Mr. Peters has set himself the task of giving an account of the septic infections of the throat, especially of the tonsils, and of their relationship to the general diseases which may result from so-called focal infection. He describes also the method of removal of tonsils and adenoids, and the palliative treatment of septic tonsils by the suction-cup. He believes a reasonable view of the function of the tonsil to be that it is a "mass of lymphoid tissue of varying size perforated by crypts of variable sepsis; it is protected from physical scavenging by reason of its position, and otherwise not differing from the submucous layers of lymphoid tissue which protect both alimentary and respiratory tracts." We may doubtless attribute certain inaccuracies in this book to the extreme compression necessary to keep down its bulk to 92 pages. Thus, glandular fever with mononucleosis is described as a complication of the operation for removal of tonsils and adenoids, and secondary hæmorrhage occurring from the second to the fourteenth day after operation is stated to happen only in neglected cases. The book, in fact, suffers somewhat from this compression, and is too short to furnish an entirely satisfactory account of the details of this complex subject.

THE LANCET

LONDON: SATURDAY, DECEMBER 14, 1935

THE UNDESCENDED TESTICLE

THE descent of the testis arouses various speculations. Why did Nature change the position of this organ? By what process of natural selection or other evolutionary influence was its transportation successfully achieved; by what intermediate stages, and under what motive forces? Some advantage must be assumed, not only in the descent of the testes but also in their descent at different age-periods in different species. In man they normally reach the scrotum before birth and remain there; in some monkeys they are in the scrotum at birth, but shortly afterwards return to the inguinal canals and remain until puberty when they again descend. In the mouse descent does not come about until puberty, and in the stag the testis occupies the scrotum only during the season of rut. To wonder why these things happen is not an idle pastime, since knowledge necessary for their explanation would be of benefit to mankind; and the only way to get this knowledge is observation and controlled experiment on animals. Through the fundamental work of ASCHHEIM and ZONDEK, and the developments that have followed, the nature of the necessary experiments has now become clear, and we hope they will soon be set on foot. Meanwhile we are faced with the treatment of incomplete descent of the testis in man, and the question how it may best be attempted in the light of current opinion. The reasons why treatment of some sort is required are manifold. As a rule the undescended gland lies within the inguinal canal or close to its internal or external ends, where it is not freely mobile and is exposed to recurrent and perhaps painful injury. Besides this inconvenience, it is abnormally liable to malignant change and to torsion, and may lose its power to produce spermatozoa. Consequently there is general agreement that remedial measures are demanded by the displacement itself apart from any coincident lesions such as hernia or hydrocele.

Hitherto the task of cure has been left almost entirely in the hands of surgeons, and the operative treatment has been of three kinds—excision, displacement into the abdomen, and induction into the scrotum. The desirability of excising a unilateral misplaced testis may be urged on the ground that the aberrant organ has an enhanced liability to neoplasia. On the other hand, the liability is not very great, and nowadays the feeling is decidedly against so drastic a course. An argument used in former days to justify excision was that the organ was useless as shown

by microscopical sections. MOORE's recent work¹ may be recalled in this connexion. Experimenting on rats, guinea-pigs, dogs, rabbits, and sheep, he found that if a testis was pushed into the abdomen and retained there by closure of the inguinal canal, the seminal epithelium degenerated quickly and completely, but the interstitial tissue was unaffected; there was reason to attribute this destructive process to the increased temperature of the interior of the abdomen as compared with that of the scrotum. MOORE further discovered that the degeneration of the seminal epithelium was reversible, and that if the testes were replaced in the scrotum their capacity for spermatogenesis would be regained. Such observations on the effects of malposition in animals can hardly be ignored when removal of a maldescended testis in a human being is under contemplation. They have proved that the undescended testicle is a useful organ because the interstitial tissue, in which male hormones are elaborated, remains unimpaired and so can maintain sexual potency and the male characteristics; furthermore they show that even fertility may be restored if the testicle be brought down into the scrotum. The former, but not the latter, end is also served by the second operation recommended—replacement of the organ in the abdomen. This should preserve interstitial secretion, and it has also been claimed that a testis lying in the abdominal cavity is less likely to undergo neoplastic changes than one lying in the inguinal canal. The third operation, the ideal to which the surgeon will aspire, is the transportation of the misplaced testicle to its proper position well down in the scrotum. The successful accomplishment of this aim will not only protect the patient from the recurrent injuries and discomforts associated with an incompletely descended testicle, but will place the gland in a position where it may regain its spermatogenic function. Advances in technique, such as those described by Mr. D'ARCY MCCREA in our issue of Oct. 5th, have led to a continual improvement in the results obtained by operative treatment and a far higher standard of success is now attained by surgery than was attained twenty years ago. Yet we must still admit that the results are often disappointing. It has been estimated, indeed, on the basis of several hundred cases, that in only half was the operation successful as judged by the final position of the testicle, and in only about 15 per cent. did the organ ultimately reach a normal size.²

Happily an alternative form of treatment is now available which holds out the prospect of curing the deformity in half or more of the cases without any kind of surgical operation. Experiments on animals have shown that the maturation of the testis which precedes its descent is controlled by the "gonadotropic" hormone of the anterior lobe of the pituitary, and the new treatment consists in administration of large quantities of such hormone (prolan) by way of belated substitution

¹ Moore, C. R.: *New Eng. Jour. Med.*, 1935, cexil, 422.

² Burdick, C. G., and Coley, B. L.: *Ann. of Surg.*, 1926, lxxiv, 567.

therapy. While in the uterus the foetus is subjected to the gonadotropic hormones present in the maternal blood, and it is probably for this reason that in man and the higher apes as well as in some other animals the testes are already in the scrotum at birth. Almost immediately after birth these hormonal influences become negligible, and if the testicle has not already reached the scrotum it may remain undescended until it once more comes under the influence of an increased supply of gonadotropic hormones either at puberty or at the period of rut. An apparently reasonable working hypothesis would be that failure of the testis to descend in some human infants is attributable to a deficiency in the supply of gonadotropic hormone before birth. The matter, it is true, may not be quite so simple as this. Another hormone, oestrin, is abundant in the blood of the pregnant woman and has entry into that of the foetus, and when oestrin is administered in suitable dosage to immature rats and mice it prevents the testes from maturing and causes a failure in their descent. Hence it seems possible that the primary defect responsible for failure of descent might either be a deficient supply of gonadotropic hormone, or an excessive supply of oestrin, or these two factors combined. However, seeing that from birth until puberty the individual will not naturally be subjected to the influence of these hormones, and that even at puberty they may fall short of requirements, it seems reasonable to supply the child temporarily with adequate amounts of gonadotropic hormone, and so to reproduce in part at least the hormonal conditions to which the normal child is exposed in the uterus. Theory apart, the method has now been used by a number of clinicians with a high proportion of good results. This week we print a paper by Dr. SPENCE and Dr. SCOWEN of St. Bartholomew's Hospital, who have been pioneers in England of this form of treatment, and it will be seen that their results compare favourably with those of surgery. Recent observations on schoolboys in the United States³ suggest that we may have been in the habit of underrating the frequency with which late descent of the testicle occurs spontaneously; but even so it is hard to suppose that the changes recorded among SPENCE and SCOWEN's 33 patients were natural phenomena unassociated with the treatment employed. The striking advantage of the new mode of therapy is that if it succeeds the patient will be cured, both functionally and anatomically, without incurring any persistent and unpleasant mementos of his cure; while if it fails the outlook for surgical operation will be as good as before if not better. On the other hand, if an operation is unsuccessful it may disturb the anatomy of the inguinal region in such a way as to vitiate the chances of subsequent improvement with hormone. Once the testis is laid in the scrotum it may be expected to undergo a complete restoration of functional competence, and though the possibility of subsequent neoplasia

remains a source of anxiety, it is comparatively slight and is attendant on any form of treatment which includes preservation of the testis. It seems possible that this risk is in some degree proportional to the period during which the testis has been misplaced, and if this is so an additional advantage of treatment by hormones is that infancy is not a bar to its employment.

No one will suggest that the last word has been said on the treatment of the undescended testicle. Many details of the new technique have yet to be settled, including the optimum intervals between successive administrations, the size of the dosage, and the precise nature of the hormone used. Nevertheless it does appear as though, in one more field of pathology, we are within sight of a rational and satisfactory therapeutic measure.

THE VARIABILITY OF MAN

HUMAN beings, it may be argued, do not differ from each other in the kind of innate abilities and characteristics they possess but only in the degree to which they possess them. There are many physical characteristics in which obviously the differences can only be in degree—for instance, height, weight, blood pressure, and pulse-rate. When we come to mental capacities the position is far less clear. Is the difference between a moron and an ISAAC NEWTON only a quantitative difference which can be adequately measured on a scale of intelligence quotients? In other characteristics we may suspect quantitative differences, but we can apply no measuring rod to them. For example, people seem to vary in their susceptibility to specific diseases; it is probable that here a large number of factors are at issue; we cannot at present isolate them and we cannot measure them. Even to-day, however, the variability of man in his physical, physiological, or mental characteristics is not of merely academic interest. Without a considerable knowledge of it we cannot determine where the "normal" is likely to shade off into the "pathological." Thus in a valuable study¹ of blood pressure in healthy males of 18–40 years of age, Dr. PETER MCKINLAY and Dr. A. B. WALKER found in 566 physically fit men a variation in the heart-rate at rest from a minimum of 46 to a maximum of 129, in the systolic blood pressure from 97 to 168, and in the diastolic from 46 to 108. The more extreme measurements are, naturally, very uncommon, and the major proportion of the cases fall within much narrower limits—for instance, 69 per cent. of the heart-rates lie between 62 and 86. The variability of physiological measurements such as these, MCKINLAY and WALKER conclude, is not sufficiently recognised either in standard textbooks or in clinical teaching. Too often reliance is placed upon average values, and ignorance prevails as to the range of values compatible with health.

An interesting monograph² on the variability

¹ Edinburgh Med. Jour., 1935, xlii., 407.

² The Range of Human Capacities. London: Baillière, Tindall and Cox. 1935. Pp. 160. 11s. 6d.

³ Drake, C. B.: Jour. Amer. Med. Assoc., 1934, cli., 759.

of the many and various characteristics of man has recently been produced by Mr. D. WECHSLER, Ph.D., chief psychologist of the psychiatric division of the Bellevue Hospital, New York City. The material he presents, "combed from what may be termed the farthest corners of periodic literature," covers a series of linear traits such as stature, length of head, and length of leg; metabolic constants such as body temperature, duration of pregnancy, and sugar in blood; circumference measurements of the chest, neck, and thigh; physiological functions such as the respiratory rate, pulse-rate, vital capacity; the weight of the body and its organs; motor capacities such as speed of running and swiftness of blow; and perceptual and intellectual abilities. The list of characteristics is long, but with the exception of such traits as height, weight, vital capacity, and one or two others, few of the capacities of man have been measured at all extensively. WECHSLER estimates the degree of variability by means of the "range ratio" of the 2nd to the 999th observation in order of magnitude, concluding, on empirical grounds, that the two extreme cases constitute the pathological or abnormal group. On this basis he finds that the range ratios of man's capacities seemingly fall into natural groups or hierarchies. Thus the ratios of nearly all the linear traits fall between 1:22:1 and 1:40:1 (mean 1:30:1), those pertaining to motor functions from 1:65:1 to 2:50:1 (mean 2:33:1), those of perceptual and intellectual abilities from 2:30:1 to 2:85:1 (mean 2:58:1). Numerically, and in comparison with the enormous ranges to be observed in nature, the limits of the variability of man are exceedingly small; though, clearly, small quantitative differences can, and do, give rise to very important qualitative differences. Thus our description of the difference between a genius and an average person by a statement to the effect that he has an intelligent quotient greater by this or that amount, does not, in WECHSLER's words, describe the difference between them as completely or in the same way as when we say that a mile is much longer than an inch. The genius not only has an intelligent quotient of, say, 50 points more than the average person but "in virtue of this difference acquires seemingly new aspects (potentialities) or characteristics, which produce a 'qualitative' difference." The interpretation that WECHSLER advances for the qualitative differences in the genius is that they are the result of transformations consequent to the passing of certain critical points of achievement assumed to exist in all human capacities—analogueous to the transformations that occur in material substances at certain critical points of pressure and temperature, where small changes in cause may produce striking changes in effect. As one of the rarest of all gifts he defines the ability of the genius to perceive new relationships—that is, relations which however obvious or easy to master after they have been discovered, are yet imperceptible to the mass of mankind before their discovery.

In one of his chapters WECHSLER tries to reach

a satisfactory conclusion on the thorny problem of the relation of age to mental virility. For physical measurements, measurements of strength, motor functions like swiftness of blow, and certain perceptual abilities, the data collected by GALTON nearly half a century ago, and more recently analysed in detail by RUGER and STOESSIGER and by ELDERTON and MOUL, still constitute the most extensive observations by age on any considerable number of characteristics. The general trend of these with age may be summarised as an initial rapid rise, a gradual slackening as adult life is approached, a maximum value round about 24-25 years, and then—a feature not previously fully recognised—a very definite decline at first imperceptible but more conspicuous as age increases. GALTON's investigations did not include any growth studies of intellectual abilities, and as evidence of such WECHSLER quotes the intelligence scores of over 15,000 Army officers of the U.S.A. and the results of intelligent tests applies to American civil populations by various workers. From this material he draws the conclusion that the "intelligence" growth curve differs very little in its general trend from the typical growth curves of physical, physiological, and psychomotor abilities. "Contrary," he says, "to popular anticipation, the point of optimal achievement in the case of intelligence occurs rather earlier than it does in the case of at least a large number of physical and physiological capacities. There is still some growth in intelligence after fifteen which is now generally accepted as the approximate age at which the intellectual capacities cease to grow; but what is even more striking than this is that after twenty-five (or at most thirty) our intellectual capacities are definitely on the decline, and, just as in the case of physical strength, continue to fall off progressively with age." This is a somewhat bitter pill to swallow; but perhaps the older among us can console ourselves with the thought that what we lose on the swings we may gain on the roundabouts. For native ability is not the only factor in practical life; tested knowledge and experience may be equally important, and when the former is on the downward path the latter are on the upward.

THE MINISTRY OF WOMEN

AN event is historically important if its immediate consequences are great or if the considerations behind it embody a new and profound idea. The report¹ of the Archbishops' Commission did not recommend the admission of women to the priesthood, but it will, we may predict with confidence, be regarded in future times as a turning point in ecclesiastical history, because the Commissioners have taken the revolutionary step of admitting the evidence of psychological medicine on the unconscious forces in mental life.

"Psychology throws some light on the strong feeling that is aroused by the suggestion that women

¹ The Ministry of Women. Report of the Archbishops' Commission. London: The Press and Publications Board of the Church Assembly, Church House, Westminster, S.W. 1. Pp. 90. 1s.

should be admitted to the priesthood. This emotion affords evidence of powerful subconscious motive, acting both in those who support and in those who oppose such proposals. It is especially significant that the admission of women to the ministry of the sanctuary should so often be regarded as something shameful. From evidence submitted to us we are driven to the conclusion that this sense of shame is very largely based on a non-rational sex-taboo" (pp. 34-35).

There is an appendix of special importance since it summarises the evidence on the clinical side and the significance which should be attached to it. The suggestion that women should be admitted to the status and function of priesthood rouses in many people a strong feeling either for or against the proposal. It was evident to the Commissioners that the strength of this emotional feeling, conjoined with a wide variety of often contradictory rational explanations, was due to powerful and widespread subconscious motives, and that the lack of objectivity (arising from ideas of male dominance and feminine inferiority) is to be traced to subconscious ideas of woman as "man manqué," which have their background in irrational infantile conceptions that persist subliminally in adult life.

The importance of this document historically

lies in the fact that the Church for the first time recognises these unconscious irrational infantile conceptions as determinants of adult behaviour, in this instance in respect to sex antagonism and an attitude to religion. The appendix states:—

"One of the factors in determining the restriction of the Christian priesthood to men had undoubtedly been the inevitable correlation of the Eucharist with the sacrifices of pagan religion and of Judaism, which took place in the second and third centuries. But this only confirmed the operation of deeper motives, wholly unconscious, and infantile in character, which were operative in Christianity as strongly as elsewhere" (p. 82).

This is the point where science and religion make effective contact. The rational arguments advanced by Voltaire and later by the biologists of the nineteenth century did not touch the central fact that religion ministers to the deepest needs of the individual and produces a sense of harmony which the science of those periods in no way understood. The fact that the rulers of the Church now turn to psychological medicine indicates not only that science proves helpful in dealing with the Church's problems, but that it is now dealing in its own way with the same material as the Church—the inner life of man.

ANNOTATIONS

EVERYDAY PHILOSOPHY

UNDER the energetic direction of Mr. Sidney Hooper the British Institute of Philosophy has now reached its tenth year and many of our readers will feel sympathetic interest in the letter printed elsewhere in this issue. The institute does at least two useful things. It provides each year an admirable course of lectures by distinguished men who are worth hearing, and it begs us to believe that philosophy is something which should find expression in our common lives and not an abstract study for students with a habit of mind remote from their fellows. It does more than this, but these items perhaps are all that the ordinary professional man will feel able to bend his attention to. Human interest can hardly have a better aim than to arrive at as clear a distinction as may be between right and wrong, and the natures of good and evil have occupied many minds and will no doubt continue to exercise more. They have this stability that everyone agrees that we should avoid evil and do good; the difference of opinion has been over the question as to what is good and what evil, and as the criterion has continually been shifting and, as has often happened, what was deemed good has been found to be bad, so trivial consideration has been liable to think that the practical distinction between them is uncertain. That right and wrong are not absolute qualities of items of conduct must seem fairly obvious to anyone who has absorbed the idea of evolution, and it encourages us to think hopefully of man's progress to reflect how rarely a "wrong" deed has been transferred to the "right" category, and to wonder uneasily how much evil we still count as good. But to recognise frankly that there is a drift from one list to the other is no justification for a belief that there is no real distinction between the lists. This is one of the fundamental principles of

which the letter from the council of the institute speaks; it does good service if it helps sober-minded people to think over such things more carefully.

OXYGEN THERAPY

THE offer of the British Red Cross Society to provide oxygen tents of the type devised by Dr. E. P. Poulton for clinical trial at the London teaching hospitals¹ was a welcome indication of increasing interest in the more efficient methods of oxygen therapy. Since then a similar policy has been announced by the London County Council² which has agreed to make a special grant towards the expenses of Dr. Poulton's investigation and to purchase two of the latest pattern oxygen tents to be stationed at Hammersmith and Lewisham Hospitals where they will be available for use at any L.C.C. hospital. It would hardly be an exaggeration to say that the methods of oxygen administration generally used in this country have been so ineffective as to reduce this form of therapy to little more than a pious gesture. Much wider use has been made of oxygen therapy in America. This is reflected in the commercial production of several varieties of oxygen tent apparatus, and of special aids for nasal catheter administration of oxygen; and in the provision of oxygen chambers in many large American hospitals.

Of these three effective and clinically applicable methods, the oxygen chamber would naturally be expected to be the most effective, when available. This expectation is justified by the experience of A. L. Barach,³ who reports a lower mortality in cases treated in the chamber than in those treated by the nasal catheter or the tent. The initial and upkeep costs of such a chamber are high, and it can obviously be available only in a large hospital. The nasal

¹ THE LANCET, Sept. 21st, 1935, p. 691.

² Annual Report of the Council for 1934. Vol. IV., Part I. Public Health: General and Special Hospitals, p. 20.

³ New York State Jour. Med., 1934, xxxiv., 41.

catheter method has the advantage of cheapness and ready availability. It is reasonably efficient if the tip of the catheter be introduced as far as the oropharynx,⁴ and an adequate flow of oxygen maintained. Barach⁵ and Barker et al.⁶ have shown that a flow of 5 litres per minute will maintain an effective concentration of about 35 per cent., even with a raised respiration-rate. The catheter should have several perforations near its tip and the oxygen must be passed through warm water to avoid painful desiccation of the pharyngeal mucosa. Several combined flow-meter and humidifier devices are commercially available in America; none is at present produced in this country, and efficient nasal catheter administration is rarely effected. There is no doubt, however, that oxygen can be more efficiently administered by a properly designed tent than by the best nasal catheter device. Finality has by no means been attained in tent design, as a survey of the various designs available will show; and it is possible that with increasing experience, useful modifications will increase the clinical usefulness of these devices. At present, we understand that the chief difficulty is the fact that enclosure in the apparatus often seems to have an unfavourable psychological effect on the patient. In the experience of some hospitals this sensation is so intense that a patient can hardly be induced to remain in it. A minor, but real, addition to this difficulty in the past was the unpleasant smell of rubber which tends to emanate especially from a new tent: this may well be eliminated in the most modern tents. Finally, the nursing of a patient in the tent is undoubtedly a difficult problem. Favourable results following the use of their tent in treatment of a variety of pulmonary and cardiac conditions have been reviewed by Argyll Campbell and Poulton in their recent book. The available data on "Oxygen and Carbon Dioxide Therapy" suggest that the tent has been of more value in broncho- than in lobar pneumonia. This finding is in accord with theoretical considerations based on the pathology of these two forms of pneumonia. In cardiac failure it appears that more improvement is observed in cases of failure due to arterio-sclerotic disease than in those due to rheumatic disease. In cases of congestive cardiac failure reacting favourably to prolonged oxygen therapy, relief of dyspnoea and diminution of anoxæmia are almost immediate, and a fall of venous pressure, accompanied by diuresis, is observed. In this country, favourable results of treatment in Dr. Poulton's tent have been recorded in cases of bronchitis and emphysema with circulatory failure, cyanosis after pulmonary lobectomy, and broncho-pneumonia complicating whooping-cough. In very young infants the psychological troubles do not of course arise, and it is of interest that some of the most favourable results in pneumonia have been observed in infants. After such serious thoracic operations as lobectomy or thoracoplasty, the patient has to contend not only with shock but also with a local injury to the respiratory bellows; and in these cases the use of the tent in the first few days after operation may well save life.

There has been a tendency to pay insufficient attention to the late results in oxygen therapy. If these are considered, it becomes apparent that it is in such conditions as the immediate post-operative period in major thoracic surgery, and in the pneumonia of infants, that the treatment is likely to be most

efficacious, judged by the criterion of permanent restoration to useful life. Temporary improvement undoubtedly follows in some cases of chronic disease, such as arterio-sclerotic heart failure and pulmonary fibrosis, but cannot be expected to be maintained on return to normal atmosphere. In London the tent may prove especially useful during fogs, not only providing a high concentration of oxygen but also acting as a local air-conditioning plant. In an investigation dealing with patients ill enough to require oxygen administration for relief of anoxæmia, it is well-nigh impossible to provide satisfactory controls. It is greatly to be hoped, therefore, that the combined experience of clinicians in the London teaching hospitals with the oxygen tents rendered available by the British Red Cross Society will provide a basis for a reasoned appraisal of the value of this method of treatment.

THE SHERRY PARTY

THE practitioner of medicine, like the Roman poet, finds nothing which concerns his fellow man without interest for himself. Often he may disapprove of customs and habits practised by those about him, but at least he is bound to be well acquainted with them. Otherwise he will many a time fail to understand the nature of the patient in his hands, even if he is not actually at a loss to read his physical condition correctly. Thus that recent social phenomenon the sherry party is worthy of attention from the practitioner, at any rate if he practises in a great town, for we believe that the new habit has not so closely affected country districts, where people are still wont to take tea with one another. In London the sherry party has to a great extent ousted the tea party. Reasons for this are obvious enough. First, so many people to-day, both men and women, have some occupation which takes up their time too deeply to leave them free for any social engagement in the early afternoon. When work is over they can go gladly enough to the sherry party, and thus the habit, which started only after the war, becomes increasingly popular as more of us become workers and fewer of us have leisure until late in the day. Further, the sherry party enables the entertainment of a large number of friends at a comparatively small cost, bringing together heterogeneous company to whom it is charming to be hospitable, and people nowadays cannot be indifferent to the expense of entertainment. But what of these parties looked at by the medical eye? Are they as well founded—hygienically and dietetically—as they are on social and economic grounds? The first-sight verdict would be undoubtedly "no." The party generally consists of a large number of men and women crowded into a room not intended for half the assemblage. An estimate of the oxygenation and the movement of the atmosphere of the apartment would no doubt condemn it wholeheartedly as not up to standard. Nor do we believe that the dietitian would give unstinted approval to the little sausages, the various forms of cheese biseuit, and the disguised anchovies which are being consumed in the intervals between sundry glasses of light or dark sherry, or both. But we must not overlook the psychological side of the sherry party. Here there is much to be said in its favour. They happen at a time of day when the worker is most ready for and most favourably affected by refreshment. He and she are often tired. A little alcohol brings about a quick and a full effect, which is supported by the small but supporting amounts of food

⁴ Wineland, A. J., and Waters, R. M.: Arch. Surg., 1931, xxii., 67.

⁵ Jour. Amer. Med. Assoc., 1929, xciii., 1550.

⁶ Loc. cit., 1934, ciii., 244.

eaten at the same time. Conversation and cheerful feelings come easily. People seem more attractive than usual, and return to dinner from the party probably none the worse for its crowded atmosphere, and certainly all the better for its many mental contacts.

EPIDEMIC DROPSY

AMONG the most interesting problems of tropical medicine is epidemic dropsy, a mysterious malady which, owing to its resemblance to oedematous beri-beri, has been thought to bear some relation to that avitaminosis. An opportunity for further research presented itself to the energetic investigators of the School of Tropical Medicine, Calcutta, in a widespread and alarming epidemic which started in Purulia in August, 1934. This is a district which has been visited several times previously by the disease. A house-to-house census showed that 2000 persons out of a population of 25,974 had been affected during the current year, while in the surrounding villages another 5000 cases were revealed. As on previous occasions, in other places, the disease was found to be chiefly prevalent amongst the upper and middle classes, and a distinct familial tendency was noted, though the severity of symptoms varied considerably in members of the same family, who took exactly the same food. Rice was the staple diet, and Lieut.-Colonel R. N. Chopra and Dr. R. N. Chaudhuri,¹ who conducted these investigations, are able to show that among the better class the rice required for the year's consumption is prepared from the paddy after the harvest and is stored in the houses, whereas the labouring classes are paid in kind, from day to day, with paddy, which they husk into rice for immediate use. Another difference is that the better classes throw away the rice water, whilst the poorer drink it. Rice collected from different families in various localities showed that many grains (50–80 per cent.) in every sample had central opacities, while samples of mustard oil, which is popularly held to be the cause of the epidemic disease, were found to be mostly adulterated.

The following clinical observations are based on 66 cases examined in detail. The sex distribution was approximately equal, but the disease was not seen under four years of age. Preliminary diarrhoea was common, the stool containing some mucus and blood. Palpitation was also common, enlargement of the heart was noted in 14 cases and breathlessness on exertion in 26. Most of the patients had tachycardia (pulse-rate 90–140), and the pulse pressure was usually raised. The one constant sign was oedema, and it followed the diarrhoea. As a rule it did not spread above the knee, but sometimes the sacral regions and hands were affected. A rash on the legs and thighs (vascular or erythematous) was observed in 14 patients, and angiomatous nodules or sarcoids in 4; increased pigmentation on the forehead and cheeks was also seen. There was fever in the acute stage. The deep reflexes were normal in 57 cases, increased in 5, decreased in 3, and absent in 1 only. Reports from many villages showed that the illness caused abortion in every pregnant woman. In treatment the following measures were found effective: a rice-free diet; rest; initial purgation; and the administration of tincture of ephedra (20–30 minims) with 10 grains of calcium lactate three times daily. The main ocular complications of the disease have been studied by Lieut.-Colonel E. O'G. Kirwan,² who puts first among them glaucoma of the primary

non-inflammatory type. The canal of Schlemm and the tissues in the immediate vicinity exhibited no abnormality on section, either in cellularity or in increased fibrosis, and there is no evidence of any inflammatory process to be found in the whole of the uveal tract. Aqueous humour removed from the anterior chamber has been shown to contain a toxic "H" substance resembling histamine in its action, and Kirwan suggests that this may be produced from specific micro-organisms in the alimentary tract. Other pathological aspects have been studied by M. N. De and K. D. Chatterjee.³ The ecchymotic patches of the skin are found to consist of vascular telangiectases rather than actual hæmorrhage into the tissues. The dark-red cutaneous warty growths and nodular excrescences arising from the superficial portion of the skin have the structure of a capillary angioma. The development of these growths is not confined to the skin, and they may appear on mucous surfaces, such as the gum, cheek, and interior of the nose and tongue. The cutaneous manifestations, which appear to vary from one epidemic to another, have been made the further subject of clinical study by Chopra and Chaudhuri, who illustrate their papers⁴ with coloured drawings. In the heart the chief changes, which lead to heart failure, are the separation of the muscular fibres by enormously dilated intermuscular capillaries.

The results of these investigations point to the rice-toxin theory as being the most tenable. In the present state of knowledge there is some justification for placing epidemic dropsy among the bowel diseases, and it seems highly probable that the syndrome has nothing to do with diseases caused by vitamin-B deficiency.

THOMAS LOVELL BEDDOES

THERE have been recently many signs of a more general interest in the poetry of Thomas Lovell Beddoes, and he can be included in the category of medical men who have made a mark in general literature, although his actual professional career was slight and accidental. So much so that in his biography⁵ very little reference is made to his medical career, and it becomes clear that some of the allusions one has occasionally seen to him previously, and this after a biography had been written by his lifelong friend Thomas Forbes Kelsall, have been made through careless confusion between Thomas Lovell Beddoes the poet and his father Thomas Beddoes the doctor. The father enjoyed a high and in many directions well-deserved reputation as physician and physiologist, and his "Hygeia" is quite worth consultation to-day for the range, psychological insight, and sound theories with regard to education to be found therein, but he was not a poet. Nor was Thomas Lovell Beddoes a doctor save in name. Probably the father's reputation influenced the son to make an excursion into practical medicine, and the learning thus acquired permeates much of his poetical work. Personal influence by the father, apart from piety, to a memory can hardly have occurred, as the father died when the son was five years old, but his mother, the sister of Maria Edgeworth, was a highly cultivated woman. The boy went to Charterhouse, and both there and at Pembroke, Oxford, wrote poetry, much of his early work being written as an undergraduate, while some of his first efforts date from his school days. He had not actually graduated at

¹ *Ibid.*, p. 489.

² *Ibid.*, pp. 493 and 496.

³ Thomas Lovell Beddoes, the Making of a Poet. By H. W. Donner, B.Litt., D.Phil. Oxford: Basil Blackwell. 1935. Pp. 403. 18s.

⁴ Indian Med. Gaz., September, 1935, p. 451.

⁵ *Ibid.*, p. 485.

Oxford when he began his famous work "Death's Jest-Book," upon the perfecting of which he was engaged for over 20 years, and he died in circumstances that remain unexplained before its publication. While still at Oxford in 1825 there appeared another of his great poems, "The Bride's Tragedy," modelled on the dramas of the Jacobean period, whose terrors and splendours were the source of his serious inspiration. Prefacing Mr. Donner's biography will be found an excellent résumé of the condition of the stage in England in the early nineteenth century as regards tragedy, and this critical survey explains why Beddoes went back to Webster, Marston, and Cyril Tourneur for his ideals as to drama and his guidance as to planning his work. In 1825 came the sudden inclination towards medicine. While still *in statu pupillari* at Oxford he went to Göttingen University and remained there four years studying physiology, chemistry, and surgery, making, however, a return to Oxford to take his degree in arts. After this he continued his medical studies at Würzburg University where he eventually obtained the degree of doctor of medicine. His political sympathies, however, made it difficult for him to reside in Bavaria, and he fled the country before his medical degree was actually conferred, although later he assumed the title of M.D. and actually practised a little in Frankfort. The right to claim Thomas Lovell Beddoes as a medical man is thus established, but his fame, which has steadily grown, depends entirely upon his poetical productions. These⁶ have now been published in as complete a form as possible, and all scholars will be indebted to Mr. Donner for this excellent edition which includes the full version of "Death's Jest-Book" with parallel texts of earlier versions and various readings. The production of the book has been made possible by the generous assistance of many possessors of manuscripts and records, and should spread the fame of Beddoes while showing how it has occurred that, while always a poet's poet, he has obtained no popular fame. These two books should right the neglect, and Mr. Donner's biography deserves the real praise that is also due to his editing of the poetic corpus. And if Beddoes can hardly be claimed as a doctor, it becomes abundantly clear from his later writings that he drew freely upon medical learning.

TUBERCULOSIS IN ITALY

IN all parts of the civilised world the mortality from tuberculosis has in recent years declined substantially. This is agreed, but there is less agreement whether the decline is due to the activities of public health authorities, an improved standard of living, an epidemic periodicity in incidence or virulence, or, as must seem probable, a conjunction of many circumstances. Italy is no exception to the rule. Dr. A. Lutrario, late director-general of the public health, shows in a report to the Permanent Committee of the Office International d'Hygiène publique that its mortality-rate from tuberculosis has declined from over 200 per 100,000 inhabitants in 1887-89 to about 90 in 1934, or by over 50 per cent. The improvement in the past 15 years has been particularly rapid, following some deterioration over the years of the late war. It has been seen in both sexes and at all ages though not equally. The greatest decline has been in the first five years of life, the

rate at those ages in 1930-32 being less than a third the rate registered in 1900-02, while the least improvement is shown at ages 45-64, which over the same period of time amounts to only 18 per cent. Except in young adult life, when females are peculiarly susceptible, the fall in the death-rate has been more favourable to females than to males. If attention is concentrated on the last decade it is seen that the registered deaths have fallen from 60,000 to 35,000, and this in spite of the increase in the population, increased industrial development, and better facilities for accurate diagnosis. Lutrario prevents too much satisfaction being derived from these figures by pointing out that tuberculosis in Italy still occupies fourth place in the causes of death. Much remains to be done and he reports a new step to be taken—viz., "a national week for early diagnosis." This year 300,000 children have been examined clinically and radiologically by 3000 medical men. By such a measure it is proposed to detect all who are affected in the rising generation at the earliest possible moment and to bring about a lasting cure. The task is obviously a vast one and the results will be watched with interest. War with its inevitable economic distresses and the withdrawal from the population of the most physically fit section of the males leads invariably to a rise in the mortality from tuberculosis. It is sincerely to be hoped that the vigorous efforts that Italy is adopting against the disease will not be offset by such causes.

THE MAURICE CRAIG MEMORIAL

IN another column will be seen an influentially signed letter bringing before the public as well as the medical profession the claim of Maurice Craig to a permanent memorial as a pioneer in the treatment of nervous and mental illnesses. We hope that our readers will acknowledge the justice of the claim and will do their best to promote so worthy a movement. Craig was a great mental specialist who from the beginning of his career as an exponent of psychological medicine showed an unusual blend of scientific and worldly wisdom. His work at his hospital—he was consulting physician in psychological medicine to Guy's Hospital—and as specialist bore alike the imprint of his practical experience and his ability to retain from a wide range of reading the best of what he learned. He wrote a manual on his subject in which he showed an enviable mental poise, being able to reconcile the wisdom of old teaching with the advances in new and conflicting theories. And his great contribution to the therapeutics of his subject was his insistence on the intimate relations between general and psychological medicine and the work of the educationist. This was the subject of the Maudsley lecture delivered before the Royal Medico-Psychological Association, and was elaborated in certain directions in the Bradshaw lecture delivered before the Royal College of Physicians of London when he dwelt upon the close relationship of the systems of the body and the dangers of specialism.

It was this liberal attitude of mind which made Craig somewhat impatient of certain modern psychological work, so that the significance which he attached to the physical health of mental patients made him sometimes to appear content with advocacy of the old maxim "the healthy mind in the healthy body"; but his views were founded on a range of experience which entitled him to hold them, and as a personal adviser he was remarkably successful. "His power of throwing the whole of himself into the particular

⁶ The Works of Thomas Lovell Beddoes. Edited with an introduction by H. W. Donner. London: Humphrey Milford, Oxford University Press. 1935. Pp. 834. 25s.

troubles of the individual which gave him his wonderfully understanding and strengthening sympathy combined with his charm, were invaluable assets in gaining the confidence and affection of patients." Thus the letter in our columns, and there is not a syllable of exaggeration in it. Apart from his work of a purely professional character the public positions which Craig filled with marked success deserve an enduring memorial. He was the principal agent in forming the National Council for Mental Hygiene, and was instrumental in the foundation of the Cassel Hospital for Functional Nervous Disorders, a scheme made possible by the coöperation of Ernest Cassel. He was a member of the War Office committee on shell-shock, and it was in great part due to him and Sir Farquhar Buzzard that the theory became accepted that the mind was vulnerable as well as the body; in other words, that shell-shock formed a part of the casualties of modern warfare and that the victims should receive treatment from that point of view. The form which it is proposed that the Maurice Craig memorial should take is truly appropriate. He would himself certainly have approved of the foundation of an established centre for the activities of the National Council of Mental Hygiene, and we hope that contributions to the fund now being started will materialise promptly. Dr. Eric Wornum (121, Harley-street, London W.1) is acting as honorary treasurer to the movement.

THE PRACTITIONER IN FACTORY LIFE

In the House of Commons on Monday Mr. Lovat-Fraser called the attention of the Home Secretary to the increase last year in the number of accidents to young persons in factories. There were 21,000 accidents in 1935 against 17,000 in 1934, an increase which Mr. Lovat-Fraser was inclined to attribute to lack of concentration brought about by long hours of work. In replying for the Home Office, Mr. Geoffrey Lloyd said that the increase of accidents in 1934 applied also to adults, both, he thought, being due mainly to more extensive employment consequent on greater industrial activity. This had admittedly led in some cases to longer hours, but how far fatigue had contributed to accidents among young persons he was not in a position to say. He reminded the House, however, of the Prime Minister's promise to introduce in the second session of this Parliament a Bill to revise and consolidate the Factory Acts. The imminence of this long threatened Bill adds importance to the meeting reported elsewhere (p. 1387). The Association of Certifying Factory Surgeons, which has its headquarters in Manchester, met in London this year, possibly in recognition of the settled trend of industry away from the industrial north to the home counties. The certifying factory surgeon may be the oldest medical official, but in spite of that has remained for over 90 years a general practitioner of medicine; and this is as it should be, for he has to deal not with things but with persons. The entrants into industrial life are the school-leavers whom he already knows; being appointed by the chief inspector he is no creature either of employer or employed, but rather an impartial agent to bring the resources of medicine to bear on those entering industry, an aim for which an ex-Home Secretary present at the meeting had a specially good word. There is general recognition of the need for bridging the break between school and industrial life and for keeping watch on the health of the young worker for some time at all events after he has entered industry. When the text of the new Bill is made public it will presumably take account of these things.

The certifying factory surgeon will then gain a more effective hearing for the fruits of his experience if his Association is fully representative. At present the membership does not include more than 20 per cent. of the personnel, although we understand that during the past year efforts to increase the membership have met with good response. His office is increasingly important even if, as was remarked at the meeting by one of the oldest of them, the standard set by Whitelegge and Legge is not easy to live up to. In some respects the system of practitioner certifiers and Home Office inspectors may be heterogeneous, but it has worked well in practice and we trust that the principle will be maintained. To this end it would be desirable for the Association to redouble its efforts towards unity during the period that remains before the Bill is introduced.

MERITS AND DEMERITS OF CYCLOPROPANE

ANÆSTHETISTS had the opportunity last week of seeing cyclopropane in use in the afternoon and of discussing it in the evening. The demonstration at the Cancer Hospital on Dec. 6th of two abdominal operations, for which, after a small dose of omnopon, cyclopropane was the sole anæsthetic used, was highly satisfactory. The apparatus employed by Dr. Stanley Rowbotham was simple, with soda lime in the rebreathing bag. In the evening he read a paper at the section of anæsthetics of the Royal Society of Medicine embodying the substance of his recent communication to our columns,¹ the discussion on which elicited a general opinion that the two chief disadvantages of cyclopropane are depression of respiration and increase of bleeding. Dr. I. H. Magill, whose experience of the drug is considerable, values cyclopropane chiefly for severe chest operations, in which its non-irritating nature is a great help. He thought it difficult to say to what extent the arrest of respiration was due to absorption of carbon dioxide and to what extent to cyclopropane. Dr. Frankis Evans drew attention to peculiarities in the urine found after cyclopropane inhalation. The urine was orange coloured and in two-thirds of the patients urobilin was found to be present; although this pointed to liver damage, the patients had recovered without apparent hindrance. Dr. Langton Hewer did not think that cyclopropane would play a big part in general anæsthesia, but deemed it of great value in special conditions; among these he placed thyroidectomy in patients with bad heart risks. Dr. Rowbotham drew attention to the heightened blood pressure which was commonly associated with cyclopropane anæsthesia. Mr. H. Hepworth, D.Sc., pointed out the chemically innocuous nature of cyclopropane, which was now being made at Manchester by Imperial Chemical Industries Ltd., and was available for anæsthetists at a cost no greater than that which had to be paid in America. It was not likely ever to be as cheap as nitrous oxide.

WE regret to announce the death of Mr. Walter Sydney Perrin, surgeon to the London Hospital, which occurred on Dec. 8th. An obituary notice will appear next week.

THE sixth International Congress of Physical Medicine will be held in London from May 12th to 16th, 1936, under the presidency of Lord Horder. The hon. secretary is Dr. A. Eidinow, 4, Upper Wimpole-street, W.1.

¹ THE LANCET, Nov. 16th, 1935, p. 1110.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXX.

PROGNOSIS OF PITUITARY TUMOURS

II*—Visual Loss

It is visual loss more than any other symptom that leads patients with pituitary tumour to seek treatment. What are their prospects of retaining their sight? Prognosis, as well as diagnosis, depends on accurate charting of the visual fields, not only on the perimeter but also on the Bjerrum screen where central vision, which is much more important to the patient than any other part of the visual field, can be adequately tested. When once the tumour begins to press on the optic chiasm and produce visual symptoms there is every prospect that without treatment the patient will sooner or later become blind; there may, however, be periods of spontaneous improvement, especially in the early stages, when one eye is often much more affected than the other, and, when once the stage of complete bitemporal hemianopia is reached, the loss of sight may appear to be stayed even for years.

While every certain case of chromophobe adenoma that comes under observation has loss of vision, acromegaly may sometimes exist for years without any disturbance of vision. Of 12 acromegals at present under my care, 4 have no appreciable disturbance of vision that can be attributed to the tumour, or only the slightest depression of the upper temporal fields. Of the other cases 2 had acromegaly for ten years before visual symptoms came on. Radiograms of the sella turcica may provide useful information on this point: when the sella tends to be closed above, either by the narrowness of its entrance or by the firmness of its diaphragm, a condition suggested by disclosure of calcified interclinoid ligaments (the so-called "bridged" sella), then the chiasm is fairly strongly protected from the expanding tumour and there is probability, but by no means certainty, that operation on account of visual symptoms may never be necessary. It is best that such patients should be kept under regular observation by quantitative perimetry.

OPERATION FOR VISUAL DISTURBANCE

X ray treatment may be effective in relieving the visual disturbance of some acromegals but not of patients with chromophobe adenoma. For most cases operation is necessary; it is usually done now by the transfrontal route, and the operative mortality has been 8 per cent. in my series of 50 cases, though the experience thus gained should bring a lower mortality. Cushing ("Intracranial Tumours," Springfield, 1932) in his latest series of 59 cases had a mortality of 6.8 per cent. When the pressure on the optic chiasm is of short duration there is every prospect that partial removal of the tumour by operation will effect what is, for practical purposes, complete restoration of all parts of the visual field, though a slight degree of bitemporal hemianopia to colours can still be demonstrated. Even when the pressure upon the optic chiasm is intense, excellent recovery of vision will be obtained by operation provided the symptoms are of short duration. One of my patients, who was completely blind with pupils fixed to light before operation, could read 6/9 with one eye four days after operation. In this

case the patient had had a mild degree of visual disturbance for some months and had then gone rapidly blind a few days before operation; after operation what was recently lost was rapidly regained, whereas the earlier loss of sight was not recovered from. This is a typical result of operation to relieve pressure on the optic chiasm. There is no intracranial tumour that so consistently repays early surgical intervention as a pituitary adenoma that has begun to press upon the optic chiasm seriously enough to interfere with the vision of one or both eyes. The risks of operation are now sufficiently small, particularly in early cases, to justify the claim that temporising is inadvisable, even when spontaneous improvement has occurred. Almost every patient with pituitary tumour undergoes during his course towards blindness one or more periods of spontaneous improvement in sight. In cases in which visual acuity has been reduced to less than 6/60 in both eyes for any considerable period of time, and in which vision is limited to a part of the nasal fields, operation offers little prospect of recovery of useful sight; though I have seen once in such a case a remarkably good recovery of sight after transphenoidal operation, a recovery that was maintained over a long period of years.

While the duration and the degree of the visual loss are of prime importance in prognosis, additional information of great value can be obtained by *quantitative perimetry*. By this method the visual acuity not only of the macular region but of the whole extent of the visual field can be determined, and, naturally, areas in which the largest object or a strong light is not perceived are not so likely to recover as those in which such objects are seen. Areas of relative blindness, or "depressions" as Traquair calls them, that have sloping edges are more likely to recover after operation than those that have steep edges. Disproportion between the extent of field in which a white and coloured object of equal size can be perceived is also to a certain extent unfavourable for prognosis. Patients in whom only the more central parts of the field are depressed while vision is still preserved in the peripheral parts of the field (the scotomatous type of bitemporal hemianopia) usually make a very satisfactory recovery of sight after operation.

RISKS OF OPERATION

The risks to life are greatest in those cases in which the tumour is very large, particularly where the tumour extends into the brain. After operation by the transfrontal route smell is lost at one nostril, owing to pressure and traction on one olfactory tract and bulb, but this does not incommode the patient. Occasionally, however, both olfactory tracts are damaged during operation and then smell is permanently lost or severely impaired. Excessive thirst and polyuria are frequent in the first few days after operation, but in my experience these symptoms always subside spontaneously. I have had one case in which left abducent paresis was present for six weeks after operation. Four patients developed mental symptoms after operation, and in one, an unbalanced woman of 68, these symptoms were permanent. One patient had slight aphasia for a few days after operation, probably from interference with an extension of the tumour into the left temporal lobe.

* Part I. appeared last week.

OPERATIVE RESULTS.

In my series of 50 cases 4 died after operation. In 6 cases vision was not improved by operation but was not made worse; these were cases in which the loss of sight had been coming on for a long period of time and had become severe. In one case vision, which had been reduced to something near blindness for some months by a large chromophobe adenoma, was completely lost after an operation which had been conducted gently and without any obvious injury to the ribbon-like optic nerves. In 39 cases vision improved after operation, often dramatically and with complete disappearance of subjective hemianopia, though some depression of the temporal fields could still be displayed by suitable tests. Improvement of vision usually occurs within the first few days after operation, and probably any improvement that occurs after three weeks is due to delayed shift of a tumour as a result of the operation rather than to immediate relief of pressure on the optic nerves and chiasm at the time of operation.

In my series the recurrence-rate has been high,

as judged by regular perimetric observations extending over several years. Thus 9 patients have shown further visual loss. Of these 1 has been relieved by X ray treatment and 4 others by a second operation; in 2 others a second operation failed to improve vision, and 2 others not operated on are slowly getting worse. These recurrences were for the most part not due to rapid growth of tumour but to the incompleteness of the removal of tumour at the original operation, usually because of inherent difficulties of a large neglected tumour, but sometimes owing to error of surgical judgment. It is likely that the incidence of recurrence would be greatly reduced by more radical extirpation of the tumour, but with greater risk of life. Pituitary tumour is a disease that destroys sight rather than life, and therefore the risks to life of operative treatment must be reduced to the lowest possible dimension. A further period of useful sight can often be obtained by a second operation.

HUGH CAIRNS, M.B. Adelaide, F.R.C.S. Eng.,
Surgeon to the Neurosurgical Department,
London Hospital.

SPECIAL ARTICLES

GENERAL MEDICAL COUNCIL

WINTER SESSION, NOV. 26TH-DEC. 3RD

(Continued from p. 1325)

New Penal Cases.

CHARGES OF DRUNKENNESS

The Case of Archibald Miller, registered as of 79, Bent-road, Hamilton, M.B., Ch.B. 1928, U.Glasg., who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner: (a) You were convicted (1) on June 4th, 1934, at the Sheriff Court, Hamilton, of using a motor-car without a policy of insurance in respect of third-party risks being in force in relation to such user, and were fined £2, or 14 days' imprisonment; (2) on July 11th, 1934, at the Sheriff Court, Hamilton, of driving a motor-car without due care and attention, and were fined £1, or five days' imprisonment; (3) on June 17th, 1935, at the Justice of the Peace Court, Hamilton, of assault and breach of the peace, and were fined £2, or 20 days' imprisonment; (4) on Oct. 10th, 1935, at the Sheriff Court, Hamilton, of driving a motor-car whilst under the influence of drink, and were fined £5, or 30 days' imprisonment, and disqualified for 12 months from holding or obtaining a driving licence. (b) On March 11th, 1935, while visiting Mrs. Hoey for the purpose of attending her on her confinement, you were so far under the influence of drink that you were unfit to attend or treat the patient. And that in relation thereto you have been guilty of infamous conduct in a professional respect.

Dr. Miller was accompanied by Mr. O. Hempson, solicitor.

Mr. Winterbottom put the facts before the Council and called Mr. John Hoey, who testified to his statutory declaration, which described how respondent had attended his wife in her confinement, in company with her own doctor and a hospital sister. Respondent had returned alone later in the night very drunk, and had tried to force his way into the house. Nearly three weeks afterwards witness had seen the other doctor again for the first time.

In reply to Mr. Hempson, he said that a policeman had called on him and taken him to swear his declaration and to identify respondent. He had not com-

plained to the police or anyone else, but understood that Mrs. Beattie, the woman looking after his wife, had been to the police office to telephone and they had heard about it in that way. He had been disappointed when respondent had returned alone, without the doctor chosen for the confinement. He described the second visit in detail. The waiting woman had suggested to him between the two visits that the other doctor had taken drink and witness was looking out for something wrong. Witness was convinced that respondent was drunk on the second occasion, but not on the first. He had gone away quite well when witness said he would get the police.

Mrs. Isabella Constance Beattie, the woman in attendance on Mrs. Hoey, testified to her statutory declaration describing the two visits. She had seen nothing wrong at the first visit, but an hour later he was staggering and his speech very thick. She had left to telephone for another doctor. Later she had identified respondent. In reply to Mr. Hempson, she said the police inspector had prepared the declaration for her. She was being paid to attend Mrs. Hoey and thought the other nurse had no right to be there, as it was her case. On the second occasion the nurse had entered the house before the doctor; she had come in to fetch the doctor out; witness had not been there at the time. On the first occasion she had thought the other doctor was drunk and had told Mr. Hoey so. In reply to a member of the Council, she said she was not a certified midwife.

Dr. Miller, examined by Mr. Hempson, said he had not realised his car was uninsured, though he was technically guilty of the first offence. He had no idea the policy could be cancelled without his permission. The Legal Assessor observed that the policy had been cancelled on March 16th and the offence had been committed on April 9th. Dr. Miller, continuing, said he had protested. The second charge was that of passing a flash-light about midnight on a stormy night; he would not stop for anyone at that time of night. The assault had been technical; he had not had any animus against the man, an imbecile to whom he was in the habit of giving alms. The man had rushed at him and witness had pushed him away saying "Here's sixpence. Go away."

Mr. Hempson put in a declaration from a doctor at the Crichton Royal Institution where respondent had been an in-patient for some time this summer suffering from neurasthenia.

Witness then described how Mrs. Hoey's doctor had taken him round to the patient's house. He had been accompanied by his fiancée, a certified midwife to whom he had just become engaged. He had had two glasses of Graves before his meal, and about three single whiskies before calling on the other doctor, but no more at all after. The other doctor had a septic thumb and witness had offered to take the case for him. His fiancée had gone in with him. Finding the patient needed no attention at that time, he and his fiancée had waited outside the other doctor's surgery for over an hour and had then taken him to his garage and returned to the Hoey's house. His fiancée and brother had been with him all the time and they had had no drink whatever. Mr. Hoey had been rude and had accused him of smelling of drink and staggering, and had said he had wanted his own doctor. He had then returned to the other doctor's house, and then paid a visit to an old family friend and finally gone back home by car. He had found a message awaiting him and had gone out and visited the patient.

Answering Mr. Winterbottom, he agreed that he had had a letter from the insurance company offering a rebate in exchange for withdrawal, but had thought they could not do it. His illness had not been in any way due to drink, but only to strain and worry. He had had the Graves about 5 p.m. and the whiskies about 7 p.m. Answering the Legal Assessor, he maintained that his condition on the second visit was just the same as on the first. Mrs. Beattie had not spoken to him. His fiancée had not entered the house on the second occasion. Mr. Hoey had not mentioned the police at all. Answering Dr. Bone, he said he had got home about 11.30 p.m. after driving his car about 25 miles, and had garaged it himself and got it out again, driven to the patient, about a mile and a quarter, and back, and garaged again—all without any assistance.

Mr. Neil Campbell Miller, respondent's brother, said he had been a motor driver and tester of other drivers in the army during the war. He had accompanied his brother and his fiancée in the Austin Seven car. Respondent had been perfectly sober throughout the evening and quite capable of driving the car. His driving had been perfect. Witness was dead against anyone driving a car if he had had drink.

The witness answered questions put by Mr. Winterbottom, the President, and the Legal Assessor, and said he would have gone home on a bus if respondent had stayed at the Hoey's for a long time. Actually he had only been inside a minute or two. His fiancée had called him from the car, but had not left the car at all. Witness had not heard what took place.

Mr. Hempson read two statutory declarations from the other doctor, who described the visits to the Hoey's house and declared that Dr. Miller was perfectly sober. He had asked Dr. Miller's help because of a whitlow. He had refused to go back to the Hoey's house, being indignant, and had never been sent for again. Another declaration from the family friend said that respondent was perfectly sober when he visited her. A fourth was from a gentleman in the garage adjacent to that of Dr. Miller; he had spoken with Dr. Miller when he put his car away and found him perfectly sober and able to negotiate the difficult entry to the garage. The

next declaration was by the patient whose wife Dr. Miller had visited about midnight. He also had found the doctor perfectly sober without signs of having taken drink.

Mr. Hempson and Mr. Winterbottom addressed the Council, which then deliberated in camera. The President announced that the facts in charge (b) had not been found proved. Those in charge (a) had been proved to the satisfaction of the Council. Judgment had been postponed, subject to the usual provisos, until November, 1937. Dr. Miller would be required to forward testimonials before the 1936 session, when he was advised to attend.

The Case of William Garraway Smith, registered as of 2, Cardiff-road, Newport, Mon., M.R.C.S. Eng. 1932; L.R.C.P. Lond. 1932, who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner you have by means of an agent canvassed for the purpose of obtaining patients in respect of your practice as a registered medical practitioner carried on by you at Newport, Mon., and in particular on or about Feb. 18th, 1935, canvassed: (1) Mrs. Rhoda Lyle Hookham, of 110, Maesglas-avenue, Newport; (2) Mrs. Gwladys Jane Dodd, of 104, Maesglas-avenue, Newport; (3) Mrs. Mary Shorney, of 84, Maesglas-avenue, Newport; (4) Mrs. Smith, the wife of Alfred William Smith, of 128, Maesglas-avenue, Newport; all of whom were patients of John Joseph Crowe, a registered medical practitioner. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The complainant was Mr. John Joseph Crowe, L.A.H. Dubl. 1919, who appeared in person. Respondent was represented by Mr. T. Carthew, counsel, instructed by Messrs. Le Brasseur and Oakley, on behalf of the London and Counties Medical Protection Society.

Dr. Crowe said that until January last he had been the only resident practitioner in the industrial district of Maesglas. Then Dr. Smith had opened up a practice. Complainant had told him, in a friendly conversation, that he had a family club, as it was essential in the district; the fee was 6d. Soon after he had received numerous complaints of a door-to-door canvass. Respondent had said he did not believe in family clubs but he was canvassing for a club at 4d. a week. Complainant had rung up Dr. Smith and asked about an alleged canvasser named Wallace; Dr. Smith had denied that Wallace was working for him. Nevertheless the man had continued approaching people with cards in his hands, urging people to join Dr. Smith's cheaper and better club. Dr. Crowe declared he was not vindictive or jealous.

Mr. A. W. Smith testified to his statutory declaration describing how a man with a number of cards in his hand had gone to every house down the street and had asked his wife to join Dr. Smith's club. Cross-examined by Mr. Carthew, he said he had overheard the conversation and gone to the door. The canvasser had died on May 2nd, 1935. In reply to members, he said he had seen the cards since but not at the time; Mr. Wallace was quite a friend of his.

Mrs. R. L. Hookham and Mrs. E. Gummy testified to their statutory declarations, giving similar evidence.

Mrs. Gummy had received a green card which Mr. Wallace had signed, and next week she had tried to withdraw, but he had continued to try to persuade her. Answering Mr. Carthew, she said she had mislaid the card. She did not remember going to Dr. Smith's surgery to ask about her teeth. She

was not sure when Wallace came to her but thought it was in February. She had not gone to the surgery and joined the club there. She had been in the surgery recently, but had paid the fourpence at the beginning of the year to the canvassers, not to Dr. Smith.

Dr. Crowe put in a statutory declaration from Mrs. Dodd, who had been present on Saturday, giving similar evidence.

Dr. Smith, examined by Mr. Carthew, said he had been born in Newport where his parents and grandparents had lived. He had first practised there as a dentist, and then had qualified as a doctor, and later set up in practice a few hundred yards away from Dr. Crowe. He had gone to Newport because it was his and his wife's family home, but at first had not intended to practise there. He could produce letters showing that he had negotiated to buy practices elsewhere up to the end of February, 1935. On Dec. 27th, 1934, Wallace had called in a very agitated state and asked respondent to see his child. Respondent had advised him to go back to Dr. Crowe, but the Wallaces refused and said they would go to another doctor altogether. The child had been seriously ill but had recovered. The parents had been most grateful, and Wallace had wanted to help respondent, who had said he could collect debts for him. Respondent had started a club about Jan. 26th for a limited class of patients only. Wallace had collected about 3s. 6d. in book debts and had been given a list of the eight or nine club patients. He had been definitely forbidden to canvass, in the presence of his wife and others, and had been shown the Council's warning notice. When Dr. Crowe had rung up he had begun by saying: "You bloody swine, I'll get you out of this district." For the moment witness had not known who was speaking. About five minutes after the first call Dr. Crowe had rung up again, in a cooler mood, and said he would report the matter to the Council if there was any more canvassing. Respondent had denied the charge and had tackled Wallace about it. Wallace had denied it, and had offered to go and see Dr. Crowe about it. Respondent repeated his warning but accepted Wallace's word that he was not canvassing and allowed him to go on collecting. He had stayed on in Newport because of Dr. Crowe's threats. The green cards had been delivered about Jan. 31st, and were kept in an unlocked surgery drawer whence Wallace might have taken them, but he had no authority to do so. His original club book showed Mrs. Gummy's name in his own handwriting as having paid 4d. in the surgery on Jan. 26th. She had first asked about some teeth and then asked to join his club if he had one.

In answer to the Legal Assessor, he said that Wallace had worked for him unpaid until he entered hospital in April.

Dr. Crowe cross-examined Dr. Smith, who identified a green card with his name and Mr. Wallace's initials on it.

Mrs. Smith confirmed her husband's evidence. She had never seen any cards.

Mrs. Wallace, widow of Mr. E. Wallace, related the story of her child's illness as told by Dr. Smith. They would not have gone back to Dr. Crowe anyway. Dr. Smith had saved the baby's life and her husband had wanted to do all he could for him. She remembered Dr. Smith telling her husband not to canvass anybody under any circumstances. In reply to Dr. Crowe, she said he had visited the baby four times—not seven—but she had never said the baby was much better. Her evidence was not

what Dr. Smith had told her to say. Mr. G. W. Lidgett, chemist, remembered that Dr. Crowe early in February had purchased a few things and remarked that Dr. Smith had decided to stay in the district, but he (Dr. Crowe) had got the previous doctor out and would get him (Dr. Smith) out. He also recalled Feb. 12th when Dr. Smith had warned Mr. Wallace not to canvass, and had shown him a greenish-coloured paper saying, "Read this, Wallace." Witness had read the words "Notice" and "Medical Council" on it. In cross-examination he denied having ever spoken about Dr. Smith's canvassing to Dr. Crowe.

Mr. W. H. Curle, garage proprietor, said his wife and baby had been patients of Dr. Smith in February. He had gone to the surgery for medicine and found Mr. Wallace there. Mr. Wallace had talked to him, praising Dr. Smith very highly and saying he would do all he could to see the doctor was well patronised. Dr. Smith had come in and rebuked Mr. Wallace and warned him about canvassing. He had added that he did not want more patients as he was negotiating for a practice elsewhere. Mr. Wallace had said he would not do it any more.

Mr. Carthew put in four statutory declarations and addressed the Council. After Dr. Crowe had argued his case the Council deliberated in camera and the President announced that the Council had not found the charges proved.

Removal from Register at Practitioner's Request

The Executive Committee reported that Mr. Jean Braun and Mr. R. B. Sidebottom had applied for the removal of their names from the Medical Register on the grounds that they had ceased to practise; and Mr. J. A. Quin for private reasons. The Standing Orders having been complied with and the Royal Colleges concerned having no objections, the applications of Mr. Braun and Mr. Sidebottom were granted but that of Mr. Quin was referred to the Council with the recommendation that it be not acceded to in the absence of any evidence that he had ceased to practise.

MEDICINE AND THE LAW

A Mother is not a Parent

SOMEWHERE near the law courts is stabled the phantom coach with four horses which is driven from time to time by the judges through Acts of Parliament. By some such equestrian feat the court has lately decided that the word "parent" in the Education Act does not include the mother. Section 87 enables the local education authority to direct its medical officer to examine in any public elementary school the person and clothing of any child. If the child or its clothing is found to be verminous or in a foul or filthy condition, written notice may be given "to the parent of the child, requiring him to cleanse properly the person and clothing of the child." If the parent allows the child to get into such a condition that it is again necessary to proceed under the section, the parent is liable to a fine not exceeding 5s. No special emphasis need be placed on the word "him" in the passage already quoted from the statute. The Interpretation Act, which saves the draftsman trouble in many directions by automatically introducing into all statutes various compendious descriptions and constructions, expressly states that, unless the contrary intention appears in a statute, words of the masculine gender shall include

females. The draftsman therefore does not bother to say "him or her"; he need only say "him." There happens to be a special definition of "parent" in Section 170 (12) of the Education Act; it states that the word is to include a guardian and a person liable to maintain or having the custody of the child, but it nowhere states that "parent" in Section 87 or otherwise shall exclusively mean a male parent. In a recent case before the Catford magistrates the London County Council had been obliged to proceed against a parent under Section 87. Last December the child was removed from the school and its person and clothing were properly cleansed. In February the child was again in a condition requiring cleansing and the L.C.C. took action against the mother. The L.C.C. argued that "parent" in Section 87 includes the mother, whether or not the father of the child is living with her, and that the local authority has a statutory right to proceed against either parent at discretion. The Catford justices held that, where the father was not absent from the home, he is liable to be charged as being the person who has *de facto* custody and control. The justices dismissed the information and the Divisional Court has now ruled that they were right. A previous decision, on which the judges relied, was that of *Woodward v. Oldfield* in 1928. That case concerned a mentally defective child who was required to be sent to a special school. The father happened to be serving a sentence of penal servitude from which he would not be released for another five months. In the circumstances the judges decided that the mother really was the parent after all. The court noted that if proceedings were taken against the father by the county council for the failure to comply with the direction to send the child to the special school the poor man could but reply that he was unfortunately engaged elsewhere and unable to attend to the matter. It would be grotesque, said Lord Hewart, to call the father the parent in these circumstances.

Some circumstances, then, such as the permanent absence of the father in prison, can justify the county council in treating the mother as a parent. Is not the local education authority meant to use its discretion in the light of the circumstances? May not other circumstances, such as the daily absence of the father during working hours, justify the council in proceeding against the other parent? Presumably the county council moves against the particular person in a particular household who is deemed the most suitable object from the point of view of enforcing the law. The Catford case restores the old-fashioned predominance of the male sex which has been so drastically diminished in the past twenty years. In matters like the guardianship of infants the mother's legal rights are now but little inferior to the father's; it would startle many mothers if they were told that they had not *de facto* custody and control of their children. As for statutory liabilities, there used to be a presumption that, where husband and wife had together broken the law, the wife must have been coerced by her husband; this old doctrine of coercion has been formally abolished. Masculine responsibility for income-tax is a deplorable survival. The Catford decision is another anachronism. Though law is not biology, a declaration that mothers are not parents is the highest of ascents into the stratosphere of judicial ignorance.

Paternity Dispute—Colour of Child's Eyes

More human, perhaps, than legal interest is aroused by Reuter's account, published in the *Evening*

Standard last week, of a Copenhagen case where a husband repudiated the paternity of a child because of the colour of its eyes. His contention was that he himself was blue-eyed and so was his wife, and their respective ancestors had been blue-eyed for several generations; the child in question was brown-eyed, and he argued that it was "impossible" that he could be the father. He made no dispute until the child was 13 years old; but he then applied to the courts for an order to relieve him from liability for the child's maintenance and to restore to him previous payments in that respect. The court is reported to have consulted medical experts and to have obtained the views of the Danish Ministry of Health. Although it was stated that the chance of a brown-eyed baby being born to blue-eyed parents was only one in a hundred, the court accepted the mother's evidence that her husband (the complainant) was the father of the child. The husband was ordered to continue his contributions and to pay the costs of his application.

CONGRESS OF RADIOLOGY

UNDER the presidency of Dr. L. A. ROWDEN, the ninth annual congress of the British Institute of Radiology was held from Dec. 4th to 6th at the Central Hall, Westminster. In delivering the Silvanus Thompson lecture Mr. G. W. C. KAYE, D.Sc., took occasion to review the advances of the past forty years.

Forty Years of Radiology

They have contained, he said, scientific wonders and achievements in plenty; after Röntgen's discovery of X rays came J. J. Thomson with the electron, Becquerel with radio-activity, the Curies with radium, Rutherford with atomic disintegration, and recently a new coinage of quanta, protons, photons, and neutrons—all in forty short years. The Röntgen Society (incorporated in the British Institute of Radiology) was founded in 1897, and was the first society started in any country with the object of studying X rays. The first journal in the world to be devoted exclusively to X rays was founded in April, 1896, under the title of *Archives of Clinical Skiagraphy*; it is now the *British Journal of Radiology*. Silvanus Thompson, founder of the Röntgen Society, gave his presidential address on Nov. 5th, 1897, quoting Shakespeare's prophetic words:—

"You go not until I set you up a glass
Where you may see the inmost part of you."

It is difficult for the younger generation, he continued, to appreciate the state of the art of the radiologist in the early days. Thanks largely to the pioneer work of Bowers, the X ray tube of to-day is self-protected and shock-proof; the whole equipment is earth-shielded throughout, permits precise control, and is silent in operation. Many have devised circuits made up of various groupings of transformers, condensers, and rectifying valves which yield constant high voltages or pulsating high voltages that can be progressively increased above that of the output voltage of the transformer. The hot-cathode rectifier has almost replaced the mechanical rectifier, mercury-vapour rectifiers are now available, and copper-oxide rectifiers have been introduced for dealing with the currents obtainable in deep-therapy outfits. Higher and higher voltages for therapy seem to be the order of the day and a notable contribution to equipment is due to Allibone and his collaborators who have constructed auto-

matically evacuated X ray tubes and valves which are self-protected, shock-proof, and operated by a press-button.

Much work also has been done on the measurement of dosage. The barium platinocyanide pastille has been long employed as a dosimeter; it has been possible to show that a pastille is capable of giving dosage results with reasonable accuracy over a range of qualities of X rays excited by voltages from 50 to 150 kv. But all recent work has been on air-ionisation methods as affording the most suitable basis for sufficiently accurate measurements and it can be assumed that they do provide a physical measure of the energy absorbed in tissue and probably therefore of the biological effect. At the Stockholm Congress in 1928 the röntgen was formally adopted, and much has been done on its practical realisation. In the case of the X ray region so far examined the secondary electrons are effectively absorbed in the volume in which they are liberated; thus the definition of the röntgen, as regards the full utilisation of secondary electrons, can be met for a restricted beam of X rays by using either (a) adequately large "free air" parallel-plate chambers, or (b) small closed "air-wall" chambers which prescribe the irradiated air volume, the walls of the chamber being composed of materials of the same effective atomic number as air. It is worthy of note that in 1931 an international comparison of the röntgen, as realised by the free-air standard chambers of the Bureau of Standards, the Reichsanstalt, and the National Physical Laboratory, resulted in agreement within 0.5 per cent. for X rays generated at voltages between 100 and 150 kv. In the case of gamma rays of radium investigations are in progress on the possibility of realising the röntgen in the gamma ray region.

In the measurement of quality of X rays in everyday practice there has not been much advance beyond the half-value layer method introduced by Christen about 1913. Spectral analysis, whilst unsurpassed in the laboratory, is not a method adapted to the radiologist's needs. Of the radium standards the British consists of 15.60 mg. of pure anhydrous radium chloride. This replaces the first national radium standard deposited at the National Physical Laboratory in 1913 which had formed the basis of test of 122 g. of radium.

Certain general truths concerning radiation therapy seem to be emerging, particularly as to the types and situation of the growths suitable for treatment. As to the quality of radiation required, deep lesions and gland areas seem to necessitate the use either of radium in large quantities (bombs) placed at a distance, or of X rays of high output, which, excited by very high voltages, approach the gamma rays in quality (400 kv. outfits are in operation at Lambeth and the Cancer Hospitals and sets employing substantially higher voltages are being installed at St. Bartholomew's, the Middlesex, and Hammersmith Hospitals). The radium bomb aims at the massive depth doses possible with X rays, and there is a growing belief in the efficacy of "tele-radium-therapy" reflected in the increasing number of large radium units being set up; an 8-gramme unit in Paris, a 5-gramme one in Stockholm, several 4-gramme units in the United States of America. The Radium Beam Therapy Research Board in this country is now fostering one or more 5-gramme units.

Reference to X ray diagnosis is hardly necessary, so spectacular has been its progress. But it should be mentioned that Russell Reynolds's success in X ray cinematography will in all likelihood prove

a great step forward in the investigation of the physiology, anatomy, and pathology of moving structures.

In a period of 40 years, said Dr. Kaye in conclusion, the British Institute of Radiology and, before it, the Röntgen Society have initiated and carried through much work of both national and international significance and have established fine traditions. Men like Archibald Reid, Robert Knox, and Stanley Melville gave unstintingly of their time and energies, and the part they played will long be remembered.

Diagnostic Radiology

The medical communications to the congress were classified under therapeutics and diagnostics. Dr. G. E. Vilvandré, Dr. R. McWhirter, and Dr. J. Struthers Fulton spoke on various aspects of radiotherapy and papers on diagnosis were given by Dr. M. H. Jupe, Dr. E. W. Twining, and Dr. R. Fawcitt.

Dr. JUPE, dealing with *ventriculography*, pointed out that replacement of the cerebro-spinal fluid by air is not without its dangers; severe reaction in the form of intense headache and vomiting is not unknown, and the procedure must therefore not be undertaken lightly. He showed many instructive ventriculograms, demonstrating enlargement, displacement, or non-filling of the ventricular system, according to the site of the lesion.

Dr. TWINING's subject was *gastro-intestinal neoplasms*. The vast majority of gastric growths, he said, are cancerous, and the characteristic X ray findings are the presence of a filling defect in the shadow of the barium-filled stomach, local rigidity of the area involved, alteration in the mucosal pattern, and six-hour gastric retention, although there may be initial pyloric insufficiency and rapid emptying. In the body of the stomach special note should be taken of the edge of the filling defect: it is abrupt and sharply defined from the adjacent healthy area; on the lesser curvature it must be remembered that a shallow crater deformity may be due to malignancy, the crater deformity being due to encroachment by the growth on the lumen of the stomach. A not uncommon sign of carcinoma of the lesser curvature in the prepyloric region is the presence of a flat shadow above the main part of the stomach shadow, an appearance due to growth holding some of the opaque medium; it has been termed the "meniscus" sign. In hypertrophic pyloric stenosis in adults, of which several cases have been reported, there is a variable narrowing of the pylorus together with the absence of a palpable tumour—valuable points in the differential diagnosis from carcinoma.

Dr. FAWCITT, speaking on *fungoid infections of the lungs*, drew attention to possible infection from damp hay. The vast majority of fungi are, as far as is known, non-pathogenic to man but some are pathogenic and it is probable that in the future more will be added to the latter class. It is necessary to bear in mind that many fungi are abundant in air and that samples of sputum exposed to air may be contaminated; also that fungi are fairly common in the saliva (the patient should gargle and rinse his mouth before being asked to cough and expectorate his specimen of sputum), and that even if the fungus is present it may be non-pathogenic. Among the agricultural population of Westmorland several cases had been found all presenting somewhat similar symptoms—viz., dyspnoea on slight exertion, cough, and some expectoration. In each case the symptoms came on comparatively soon after working with

dusty hay. Tubercle bacilli were not present in the sputa. Radiographically the appearances were those of a fine mottling throughout both lung fields, the apices being clear, together with a considerable degree of emphysema. After treatment with potassium iodide the X ray appearances had altered, the shadows becoming more sharply defined and fibrosis being more evident. Dr. Fawcitt brought forward these cases with the idea of emphasising that where the clinical symptoms and signs are suggestive of pulmonary tuberculosis and yet on repeated examination no tubercle bacilli are found in the sputum the possibility of a bronchomycosis should be considered if the patient is an agricultural worker.

The Mackenzie Davidson lecture was this year given by Dr. G. HARRISON ORTON, who took as his subject Calcium Changes and their Importance in Diagnostic Radiology.

The Exhibition

As usual the exhibition of apparatus attracted many visitors to the Central Hall. This year there has been no revolutionary advance in design or practice, but minor improvements in the construction of the various units was evident. Shock-proof tube cases are smaller; shock-proofing of apparatus is now standard. There is a tendency to increase the output of mobile units suitable for ward work, one being available to give 60 m.a. at 90 kv. A stereoscopic teleradiographic unit aroused much interest, the cassette changer and the tube-shift being electrically controlled. On one stand were noted a urological radiographic couch and a motor-driven radiographic couch in which castings had not been employed, all suitable metal parts having been welded. Nowadays a steady improvement in the design and capabilities of the motor-driven tilting table is to be expected, and it was this year conspicuous. A feature of the exhibition is always the fine collection of skiagrams shown on the film manufacturers' stands; apart from their technical quality many of these films are of great medical interest and provide an opportunity for informal discussion.

The annual dinner of the congress was held at Claridge's on Dec. 6th.

PARIS

(FROM OUR OWN CORRESPONDENT)

B C G

Of the two latest reports on B C G to be presented to the French Academy of Medicine the first concerns the Casba quarter of the town of Algiers, with a population of more than 40,000. The vaccine has been given by the mouth to new-born babies in this quarter since 1926; and in the three-year period 1931-33 about every other child born (2393 out of a total of 4260) was thus inoculated within the first ten days of birth. The general mortality, it is stated, was 29 per cent. higher among the controls than among the inoculated. Figures from Athens, as interpreted by their sponsors, are even more favourable to B C G. Between April 14th, 1925, and April 14th, 1935, 7351 babies were inoculated with B C G, which in 6813 of these cases was given by the mouth on birth. The elder children were given B C G either by the mouth or by subcutaneous injection. The conclusions to which the Greek observers come are (1) that B C G inoculation is harmless; (2) that it should be supplemented by the isolation of the new-

born from possible sources of infection for a certain time; (3) that the morbidity among the B C G children due to "anergising" ailments (presumably such diseases as measles) is less by one-third than that of the controls; and (4) that the general mortality of inoculated children from the age of one month to six years is six times less than that of the controls.

TYPHOID AND UNDULANT FEVER IN FRANCE

In a survey of the infectious diseases notified in France last year, Dr. A. Lemierre¹ urges the health authorities of the different departments to simplify their reports by adopting a uniform system of presentation. Some of these official reports, it appears, are still hand-written. All the 88 departments sending in health reports refer to the presence of typhoid fever in their midst. The most important source of this infection, to judge by the frequency with which it is mentioned, is the polluted well. The consumption in the raw state of shell-fish by the seashore is another potent source of infection; and in spite of official interdiction, the sale continues of shell-fish collected in forbidden areas in the proximity of sewers. In Toulon, for example, typhoid fever is endemic and causes some 30 deaths every year because of this reprehensible practice. Seaside summer visitors need to be taught that their amateurish invasion of the shell-fish domain and their consumption on the spot of whatever they can pick up are fraught with danger. The comparative immunity from typhoid and paratyphoid fever enjoyed by ex-soldiers who have undergone compulsory inoculation against these diseases does not seem to have made the civilian population clamour for their own protection by this means, or even passively allow it. Oddly enough, combined inoculation against diphtheria, typhoid, and paratyphoid fever proves more acceptable; the public strains at the gnat, but does not mind the camel.

Undulant fever is evidently spreading and its existence has now been notified in as many as 42 departments. And as some of those failing to notify a single case are in the most highly infected areas, the immunity enjoyed by them must be more apparent than real. Formerly, undulant fever was limited to the south of France, whereas now it has invaded the east and centre. The organism commonly infecting human beings in this country is the *Brucella melitensis*.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

THE PROBLEM OF WATER POLLUTION

WITHIN the last two years most of the States have set up planning boards, some of them appointed by the governor, others established by act of the legislature. The work of these State planning boards is coordinated by a National Resources Committee in Washington. On most of the State boards public health is represented by the State health commissioner or by his sanitary engineer. It is natural therefore that the subject of stream pollution by human and industrial wastes has not been neglected. Recently published reports of the National Resources Committee lay emphasis on water pollution as one of the major water problems facing the States.

¹ Bull. de l'Acad. de Méd., 1935, cxiv., 304.

The New Jersey board reports that for many miles their streams are so badly polluted that all thought of their recreational use has long since been abandoned. A study made on the Upper Mississippi by Minnesota and Wisconsin shows that "the annual loss to commercial fishing and clamming through water pollution is \$95,000; the annual damage to sport fishing and attendant industries is \$35,000; while decreased property values in the Twin Cities was estimated at \$2,000,000, and damage to lands for recreational purposes at \$1,500,000." The Missouri State Planning Board finds that pollution of its streams is not yet heavy enough to endanger fish life or to create a nuisance, but that it is placing an ever-increasing load on water purification plants in cities depending upon the rivers for their water-supply. Colorado notes that "it is significant that certain land areas in Colorado situated between two river valleys and not subjected to contaminating influence of polluted streams experience relatively low death-rates from water-borne diseases, showing thereby that stream pollution may justly be recognised as a dangerous menace to life and health."

The national committee summarises the dangers to human health as follows:—

"Water-borne diseases are likely to be spread by use of contaminated water for domestic purposes or the irrigation of crops, or for bathing, boating, and fishing, or for the production of ice supplies which later come in contact with food or drinks that are consumed without being cooked. Dairy animals having access to polluted streams present a public health hazard for they may easily pick up disease-producing bacteria on their bodies which are transferred mechanically to the milk."

They add that the protection of water used for municipal water-supplies and recreation is urgent in virtually every State. Rather strangely their report fails to remark that the pressing problem in one State may be the result of an offence in another State. Thus the most serious pollution in New Mexico is that of the Animas river which carries large quantities of untreated sewage from the city of Durango in Southern Colorado across the State boundary. The doctrine of "States Rights" upon which the United States Constitution is based, and which is still regarded by most Americans as sacred, makes the solution of such problems difficult.

INADEQUATE SEWERAGE

Almost every State board has made a study of sewage disposal. In Maine 100 towns were asked for a report. Of those replying 55 per cent. said that they had sewerage systems; of the remaining 45 per cent. without public sewerage many have private sewers that empty into the streams. In Kansas the sewage of 46 per cent. of the urban population is returned to the surface water-supply either untreated or treated inadequately. Population centres comprising a total of 8,393,000 people discharge untreated sewage into the waters of New York State. In Minnesota only 121 of the 256 municipal and 24 large institutional sewerage systems have sewage treatment plants. Denver, the largest city in the Rocky Mountain belt, containing 28 per cent. of the population of Colorado, has no sewage treatment plant. Since the Colorado planning board made its report however, Denver has voted a bond issue to meet this situation.

The disposal of industrial wastes often creates greater difficulties than the disposal of sewage. Too great severity on the part of the State may result in economic loss and unemployment. The Texas

board reports as a particularly difficult problem the disposal of the salt water brought to the earth's surface by the drilling operations of the petroleum industry.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

THE "ACUTE ABDOMEN" IN CHILDHOOD

At a meeting of the Edinburgh Medico-Chirurgical Society last week Sir Lancelot Barrington-Ward read a paper on the diagnosis and treatment of acute abdominal conditions in children. Of 278 cases of "acute abdomen" admitted to Great Ormond-street Hospital, London, in the last five years, 41·8 per cent. proved to be acute appendicitis, 37·6 per cent. intussusception, 7·7 per cent. intestinal obstruction, and 7·7 per cent. peritonitis; the remainder were rare conditions. Erroneous diagnosis, Sir Lancelot said, would be avoided by not expecting every case to present all the typical features; in particular the symptoms produced by inflammation of a "concealed" or "pelvic" appendix were often misleading. A waiting policy was dangerous in cases of appendicitis in children, and operation at the earliest possible stage was advisable; but it must not leave the abdomen in a rough damaged condition. The speaker held strong views about the after-treatment of peritonitis: absolute starvation provided the rest essential for cure, and nothing should be given by the mouth for 48 hours. Ten per cent. glucose and normal saline should be given per rectum every four hours, and continuous intravenous glucose was often of great value. Purgation should be avoided; heat should be applied to the abdomen; and morphia given as long as necessary.

The diagnosis of acute intussusception had often to be made when there were no symptoms of obstruction. The speaker preferred to resect the involved bowel if the child's condition was moderately good, but this was dangerous in children under 1 year of age. The mortality rate for 88 cases was 20 per cent. Intestinal obstruction he described as the most fatal of abdominal emergencies. The diagnosis was often missed as the symptoms are often atypical. Rarer causes of an abdominal emergency were Meckel's diverticulum (26 cases), acute cholecystitis (1), perforated duodenal ulcer (10), and torsion of the ovary.

In the discussion which followed, Miss Gertrude Herzfeld compared the statistics at Great Ormond-street with those at the Royal Edinburgh Hospital for Sick Children. She was surprised to find that the Edinburgh hospital admitted about twice as many acute abdominal cases as were shown in Sir Lancelot's figures; about 1200 having been admitted during the past ten years. The proportion of cases of acute appendicitis is higher, being 72 per cent. in the Edinburgh hospital. In 120 cases of acute intussusception at Edinburgh the fatality-rate was only 8 per cent. Miss Herzfeld avoids resection if possible, and of the 120 cases only 6 were thus treated.

DRESSMAKERS' WARD AT THE MIDDLESEX HOSPITAL. The Bishop of Willesden dedicated, on Nov. 21st, a ward for the use of dressmakers at this hospital. Three beds have already been endowed and a number of firms have undertaken to raise money to endow further beds. It is hoped that in ten years a sum of £25,000 will be raised. It is believed that this is the first ward to be dedicated to a trade.

PANEL AND CONTRACT PRACTICE

THE PANEL CONFERENCE

REPRESENTATIVES of local medical and panel committees held their long deferred annual conference on Dec. 5th in the Great Hall of B.M.A. House with Dr. H. C. JONAS (Barnstaple) again in the chair.

Dr. H. G. DAIN (Birmingham) chairman of the Insurance Acts Committee (I.A.C.), in moving the adoption of the report said it was gratifying to note that as from July 1st, 1935, the remainder of the cut in insurance practitioners' remuneration had been restored. They would now have to consider whether to approach the Government on the amount of the capitation fee. The long and anxious dispute in Llanelli between the workmen's committee and the local practitioners had, he said, been settled with the help of the National Defence Trust funds. He stressed the importance of pushing forward the B.M.A. pensions scheme; insurance practitioners and others had the opportunity during the remainder of the ten-years period agreed with the insurance companies of entering the scheme at the most favourable rates. When these rates were fixed investments were producing about 5 per cent. and it was unlikely that the premiums would ever be so low again.

Representation on the I.A.C.

Since 1917 the direct representatives have been nominated by the local medical and panel committees of each group, and elected by the votes of the individual members of those committees, a practitioner having only one vote in one group even if a member of more than one committee. In 1922 the I.A.C. recommended that only members of panel committees should vote, but this recommendation was referred back. In 1924 the conference asked the committee to inquire into the disproportion which existed in certain areas between the number of voters and the number of names on the medical list, and one area agreed to reduce the number of its committee members. The I.A.C. has now been considering the proposal of a southern group that the voters should be the local medical and panel committee in their corporate capacity and entitled to a number of votes equal to the number of names on the medical list of the area.

Mr. N. E. WATERFIELD (Surrey) moved:—

That this conference requests the I.A.C. to devise a system by which the various groups of practitioners in an electoral area shall have a voting power approximating to the numbers of panel practitioners in the groups; and to arrange for such a scheme to be put into force for the election in 1936.

There would, he thought, be general agreement that voting power should approximate to the membership in an area. The total number of practitioners in Group N. was 2252, while the total membership of the nine panel committees in the group was 258—one vote for each 9.4 practitioners. But in Canterbury a panel committee of 9 represented 10 practitioners, while in Surrey a committee of 36 represented 752 practitioners.

Dr. DAIN said that if the present method of election gave a satisfactory committee there was no need to alter it. Surrey's proposal was more logical, but it would not prevent counties and boroughs supporting each others' candidates. It was time, he felt, for younger practitioners to be given an opportunity of serving on the I.A.C.

Dr. H. R. CRAN (Surrey) did not think the proposal would involve much extra work. The I.A.C. would

decide the value of each vote cast by different committees; this would give the smaller committees a chance of securing representation. It should be made compulsory for the second vote to be used.

The motion was carried by a large majority.

Dr. JOSEPH STARK (Edinburgh) moved:—

That the voting for members of the Insurance Acts Committee should be by members of panel committees.

In Scotland, he said, the I.A. subcommittee was elected by the panel committees and it was felt that the method of appointing direct representatives to the I.A.C. should be similar. He agreed that in some areas the local medical committees included all the practitioners in the area, but the panel committees were more select.

In reply to questions, the CHAIRMAN stated that in three or four areas in England the personnel of the local medical committee differed from that of the panel committee, and that the functions of the local medical committee were restricted to range of service cases and considering disputes between practitioners.

Dr. DAIN regretted that the question had been raised. From the beginning the election of the I.A.C. had been by insurance practitioners with a leavening of non-insurance practitioners. Having been invited to take part in the work of local medical and panel committees it would be uncivil to take from non-insurance practitioners their right of voting.

The motion was lost.

Fitness for Alternative Occupation

Dr. DAIN (I.A.C.) moved:—

That the conference agrees, in cases where an insured person is considered by his doctor to be fit for work but permanently unfit for his former occupation, that the doctor might give an indication to this effect in his next certificate by the insertion in the "remarks" column of the words "alternative employment."

The proposal considered last year was that when a patient was likely to be fit for some employment but was not likely ever or for a long period to be fit to resume his previous occupation, this fact might be communicated to the society in the form of inquiry what action the society proposed to take. This proposal was open to objection as a possible infringement of professional secrecy. When an insured person was permanently incapacitated for his ordinary work and his complete disability was drawing to an end, directly the practitioner indicated that the patient might be fit for some sort of work certain approved societies stopped payment of benefit. Other societies were prepared to act more liberally. The proposal would give a society the opportunity of consulting an insured person about taking up an alternative occupation.

Dr. W. H. BRADLEY (Somerset) in moving as an amendment—

That the conference agrees, in cases where an insured person is considered by his doctor to be fit for work but not fit for his former occupation, that the doctor might refer him to the regional medical officer and indicate his opinion with regard to employment on Form R.M.2,

said that his committee had grave scruples about the motion. An insured person might come to fear that his whole life would be governed by the medical certificate. Even the modified procedure might be felt to violate the rules of professional secrecy.

Dr. R. WARING TAYLOR (Oxon) thought the I.A.C. were asking a remarkable thing. In every certificate,

except the final one, the practitioner certified that the patient was incapable of work: if he was not incapable of work, it could not be indicated on the certificate. It was not the practitioner's duty to suggest the type of employment for which the patient was fit.

Dr. L. V. BROADHEAD (Barnsley) said a man could either work or he could not work and in distressed areas, such as he represented, there was no alternative employment.

After a prolonged discussion in the course of which it was explained by Dr. DAIN that the I.A.C.'s proposal was to deal with the question before the patient was fit for other work, and the feeling was expressed that it was better for the doctor, the patient, and the society to come to an agreement, the amendment was lost by a large majority.

Returning to the motion Dr. DAIN suggested that the additional remark contemplated by the I.A.C. would not contradict the statement on the certificate that the patient was unfit for work. Professional secrecy would be preserved, as in every other certificate, by giving the certificate to the patient. He would object to the endorsement "now fit for light work." Neurosis cases which might be improved by working were not within the ambit of the motion, which related solely to persons permanently incapacitated for their ordinary occupation. He begged the conference to face up to the practitioners' own responsibilities in the matter.

The motion was lost by 54 votes to 87.

Mortgaging of Practices

Dr. T. P. LEIGHTON (Lancashire), presenting a motion asking the I.A.C. to take steps to curtail or stop the exploitation of medical practitioners in connexion with the purchasing and charging of practices, said that the mortgaging of practices had increased lately to an alarming degree. Lancashire felt the gravity of the problem and the need for immediate action. Money-lenders were sending circulars offering to lend up to a hundred per cent. of the purchase price of practices and clerks of insurance committees were receiving letters offering bribes for information as to practices. In Lancashire alone some £40-50,000 a year due to insurance practitioners was assigned to lay people. He knew of one practice which had changed hands four times in seven years, and of two practitioners who had got into the hands of money-lenders and had committed suicide.

Dr. DAIN said the I.A.C. would like to accept an instruction from the conference as suggested by Lancashire, but no practitioner would welcome restrictions on the sale of his own practice. If a man signed a document blindly it was largely his own fault because advice could always be obtained from the Association. The I.A.C. was alive to all Lancashire's points, but while the purchasers of practices should be safeguarded the rights of the vendors must also be protected. It was usually the fact that the new practitioner could not hold the practice that brought about a crash. In his own area (Birmingham) he was informed that there had been no case of default by the purchaser. The I.A.C. hoped to bring forward a scheme of their own for assisting in the purchase of practices.

Dr. J. W. BONE supported Dr. Dain. The point, to his mind, was that if a purchaser is in a position to put down a substantial part of the purchase money or to find adequate security he could readily borrow money from reputable sources. The difficulty was

when he could do neither. Practices were now such valuable assets that the whole of the purchase price could be borrowed and it was a good thing for young men to get into practices of their own if they could make good. Conditions would always be onerous in the absence of security other than the practice itself, and, clearly, in such cases, if the purchaser did not keep up his payments the lender would foreclose. The British Medical Bureau, the Insurance Acts Committee, and the Medical Insurance Agency had set up a tripartite committee which was making strenuous efforts to reach a solution of the problem.

The motion was carried by 61 votes to 42.

Road Accidents

Dr. L. J. PICTON (Cheshire) moved *inter alia* :—

That it is inequitable to deprive panel practitioners who are called upon by the insurance system to give full treatment to accident patients, not on their panel, of the whole of the fees allowed by that system.

That the system now in vogue in Cheshire (under the sanction of the Ministry) by which the emergency fees are allotted as heretofore but diminished (or wiped out) by the deduction of the amount, if any, paid under the Road Traffic Act appears to be equitable.

The I.A.C. might, he said, have been thinking more of the average requirements of urban areas than those in the counties. Cheshire wanted an elastic system which would apply everywhere. He submitted that there were two kinds of emergency treatment: (1) that required at the time and place of the accident; (2) other within the next 24 hours, perhaps in a cottage hospital. First-aid at the scene of the accident followed by the toilet of a compound fracture should, he felt, attract a fee of more than 12s. 6d.

Dr. DAIN pointed out that the fees for emergency treatment were a matter for settlement between the panel committee and the insurance committee in the areal distribution scheme. Cheshire had already made an arrangement which they regarded as suitable, but this was purely domestic. There was nothing to prevent any other area taking action similar to Cheshire. Books of claim forms could be obtained containing statements of the legal position and it was most desirable that panel committees should see that their constituents had these books.

It was agreed that the points raised by Cheshire should be referred to the I.A.C.

Medical Records

The I.A.C. had given its approval to a new regulation providing for the investigation of alleged failure to keep proper medical records of insured persons. Kent's motion—

That the conference instructs the I.A.C. to press for the abolition of the compulsory statistical compilation of national health insurance medical records and to secure that these medical records be used primarily for such clinical notes as are of real value

led to an animated discussion. Dr. B. H. PAIX thought that definite steps should be taken to alter the bias of the Ministry from the statistical to the clinical side when assessing the value of a practitioner's records. There was no need for compulsory statistics; Scotland and Northern Ireland had abolished the requirement to note all attendances and visits. In reply to a question by Dr. H. J. CARDALE (London) it was however pointed out that the forms of record in Scotland differ much from those in use in England and Wales.

Dr. DAIN stated that the conference had always hitherto decided to retain the medical records in their present form. Scottish doctors had to coöperate in organised research in place of entering ticks; there was no throwing off the shackles. The entry of a tick on a record card ensured that the doctor had the record in front of him in order to make the tick. He gathered, however, that R.M.O.'s are now instructed to pay more heed to the clinical notes and less to the numbers of ticks.

The motion was lost.

Immunisation against Diphtheria

An amendment by Middlesbrough was withdrawn in favour of a London amendment moved by Dr. A. K. GIBSON in the following terms:

That this conference is of opinion that the responsibility of insurance practitioners in regard to diphtheria immunisation should be confined to immunising patients who bring a certificate showing that they are Schick positive.

London generally agreed, he said, that insurance practitioners should take their share in new forms of treatment. Immunising as such was simple, but Schick testing could not always be done thoroughly by general practitioners. There were schemes in London boroughs covering children from the age of 1 to 12 years. After 5 years of age a child was more exposed to infection and usually either got diphtheria or acquired an immunity to it, which gradually increased up to 12 years of age and even beyond. Experts said that unless they could themselves Schick test children between 1 and 5 years old they could not be absolutely certain about the potency of the toxin they were using. The difficulty was not in the application but in reading the results. If an insurance practitioner got a negative result and, as was very often the case, had no chance of testing the potency of the material, he might be led astray.

Dr. DAIN thought the London amendment would lead to an interesting part of insurance practitioners' work being handed over to the public health authorities. He could not think that insurance practitioners as a class were less fit than (say) a junior medical officer of a public health department to apply the test. In these days the material used was unlikely to be impotent.

Dr. C. W. SOMERVILLE (Midlothian) raised the question of the cost to the drug fund. If one child was done at a time, three separate capsules were required; whereas he was frequently able to immunise twenty or thirty at a time when the cost per head was much lower.

Dr. A. J. LEWIS (Southport) asked whether the patient was to be tested and immunised at his own desire. Dr. Dain's reply was that the service would be rendered at the request of the patient but at the practitioner's discretion.

The London amendment was lost by 63 votes to 66.

The Defence Trust

Mr. N. BISHOP HARMAN reported on the present position of the National Insurance Defence Trust; the excess of income over expenditure for the past year was, he said, some £12,000; rise in the price of gilt-edged securities added some £48,000 to the capital value of the fund, which now stood at over £280,000. Dr. DAIN reminded the conference of certain financial responsibilities undertaken in respect of the Llanelly dispute which did not appear in the statement of accounts. Dr. OSCAR WILLIAMS (Carmarthenshire) expressed the appreciation of Llanelly

practitioners for what had been done for them; it was gratifying to find that the Association had weapons which the local practitioners had not realised. He hoped that the experience gained in that dispute would lead to the easier settlement of other disputes. Dr. Dain said that, at the instance of the Llanelly practitioners, the Carmarthen area had subscribed a further 250 guineas to the Trust Fund, although they had reached their quota in 1932.

Dr. J. A. BROWN (Birmingham) moved to authorise the trustees to raise a defence loan from insurance practitioners to supplement the present funds of the trust. The idea of a loan instead of a donation would, he thought, appeal to many practitioners, and it could be based either on equal contributions from each practitioner or on a sliding scale according to the size of his panel. It should be returnable on death or withdrawal from insurance practice and the loan should not be utilised unless and until the existing trust fund had been exhausted. The proposal was referred to the trustees.

Dr. M. W. RENTON moved on behalf of Kent to make one of the objects of the trust the financial support of selected medical candidates for election on public health authorities where it is deemed necessary in the public interest. There was a danger lest lay authorities without medical members to present the medical point of view should make only whole-time medical appointments in their services. In Kent the profession had been refused access to the public health authorities and their only alternative was medical representation on those authorities. This proposal also was referred to the trustees.

Remuneration

Dr. A. BEAUCHAMP (Birmingham) wished the I.A.C. to approach the Ministry and ask for an adequate capitation fee. Since 1924 the capitation fee had remained at 9s.; insurance practitioners in 1935 were doing more work than was anticipated in 1924, both in treatment and in diagnosis. They should give the best possible service but the capitation fee should be commensurate with their obligations.

Dr. A. BALDIE (London) thought that even if this was not the time to press for reconsideration there was work to be done in preparation for negotiations. At present insurance practices of less than 800 patients were not an economic proposition. Numerical statistics were fallacious; insurance practitioners should show how their work was done, so that this information might be submitted to the Ministry when the time came.

Dr. DAIN said that ever since the last award the I.A.C. had been preparing for the next. It would be better, he thought, to wait until they could appear before arbitrators and show how each criticism of the service had been met and the necessary adjustments made. It would be simple to show how the work had increased in volume and intensity; he need only mention the treatment of varicose veins and the Schick test. The award was open to be challenged at any time by either side, but hitherto neither side had challenged it and he was not sure that immediate action would be prudent.

Dr. BEAUCHAMP reiterated his opinion that the time for reconsideration was ripe, but the conference decided (with one dissentient) to proceed to the next business.

Sundry Resolutions

Dr. T. D. LAIRD (Lanark) asked for a ruling that the medical treatment provisions of the National Health Insurance Act ought to be extended to include

all persons of a like economic status to the insured, and the conference agreed.

Dr. R. WALKER (Cardiff) asked for an expression of opinion that all insured persons should be entitled to dental benefit. It was anomalous, he said, that members of some approved societies could get much help with the cost of dental treatment and others could obtain none. In Sweden dental treatment was

provided from three years of age onwards, but at home the dental condition of many of their patients was deplorable. The motion was carried.

A vote of thanks was accorded to Dr. Jonas for his services as chairman of the conference and to Dr. Dain, chairman of the I.A.C. Mr. D. Elliott Dickson, F.R.C.S., of Lochgelly (Fife), was appointed chairman of next year's conference.

PUBLIC HEALTH

Doctor and Midwife

At its council meeting on Nov. 20th the British Medical Association had before it two memoranda drawn up by its National Maternity Service Committee.

NATIONAL MATERNITY SERVICE

The first of these, after reviewing the recent trend of maternal mortality and noting the fact that, in spite of the steadily growing provision of antenatal clinics and hospital accommodation, the number of deaths from eclampsia were still rising, emphasised the principle of continuity of medical and nursing care throughout pregnancy, labour, and the puerperium as the basis of any successful scheme. It had been suggested in some quarters that a State-aided rate-aided service should be conducted by obstetric specialists. The answer to that suggestion was that the incident of pregnancy should not be the signal for the transference of the woman from the care of one practitioner to another. Maternal mortality was not attributable to one clearly defined factor which would be absent from a special service of the kind suggested. The birth of a child was not a mere mechanical event unrelated to the life history of the mother; and a specialist in sole charge of the patient who was without full personal knowledge of her medical history would be imperfectly equipped for her care during pregnancy, labour, and the puerperium. The B.M.A. Council is of opinion that the most frequently needed forms of intervention in childbirth do not require more skill than has been attained by the vast majority of general practitioners, or than can be achieved by medical students during the extended period of training now laid down by the G.M.C. It is rather the judgment to decide when to intervene or whether to intervene at all that is required for good midwifery practice. To secure the required continuity of care the B.M.A. Council would insist on the provision of a general practitioner and a certified midwife for every maternity case. The reform of the practice of midwives would not in itself remedy the present chaotic system. The scheme is set out in brief as follows:—

- (1) Efficient antenatal care by, or under the responsibility of, a medical practitioner throughout pregnancy in every case.
- (2) Attendance in every case by a certified midwife during the antenatal period, labour, and the puerperal period.
- (3) Attendance by the practitioner chosen by the patient during pregnancy, labour, and the puerperal period, when, as a result of his antenatal examination, the practitioner has declared his personal attendance to be necessary, or when his attendance is requested by the midwife.
- (4) The provision in every case of at least one post-natal consultation between the patient and the practitioner (including, if necessary, examination).
- (5) The services when necessary of a second practitioner (for example, to administer anaesthetic).

(6) The services of a consultant when considered necessary by the practitioner.

(7) The provision of laboratory services when considered necessary by the practitioner.

(8) The provision of beds for such cases as in the opinion of the practitioner require institutional treatment; treatment in the institution being, as far as possible, continued by the same practitioner.

(9) Supply of sterilised obstetric dressings in every case.

(10) Provision of ambulance facilities for patients requiring to be removed to institutions.

(11) The provision of "home helps" (i.e., women trained in domestic work), who would relieve the mother of the worries of domestic management during the lying-in period.

The best method of providing a maternity service of this kind would, in the B.M.A. Council's belief, be an extended system of National Health Insurance.

WHOLE-TIME SERVICE OF MIDWIVES

The B.M.A. Council also had before it a memorandum on the report of the Joint Council of Midwifery. It was agreed that if a whole-time service of midwives was to be adopted in certain areas, that was more a matter for the midwives themselves than for the medical profession, provided that if there was to be such a service, the following conditions must be regarded as essential:—

- (1) That there should be as free a choice as possible of midwife by patient.
- (2) That in the case of individual midwives, skill, judgment, and personality should reap their reward.
- (3) That the medical practitioner should have the opportunity of advising his patient as to the midwife who will undertake in association with him the responsibility for that patient's welfare.

Ozone for Water Purification

It is remarkable that ozone, which about 50 years ago was popularly considered to be the most beneficial constituent of sea air, has been little used in this country for the purification of water although on the continent and more especially in France it is frequently used in preference to chlorine or chloramine. Lieut.-Colonel G. Ewart Morgans, of the "Otto" Company, in a paper read at the recent Public Works, Roads and Transport Congress, makes a strong case for ozone as a means of purifying water both for domestic use and for swimming baths. Ozone, it seems, acts entirely by virtue of its oxidising power; hence when it is desired to sterilise water by its means the water should contain little organic matter other than the organisms it is desired to kill. Colonel Morgans suggests not more than three milligrammes of oxidisable organic matter per litre, a degree of purity which in many cases must be reached by sedimentation or filtration. This is perhaps not altogether a disadvantage as it is surely desirable that permanent water-supplies, as distinguished from the water for an army in the field, should not only be sterile but be in every way acceptable to the consumer—a condition which for many sources of public

supply can best be attained by storage, followed if necessary by filtration. Whatever sterilising agent is used will of course be most effective when the water is clear and organically pure; this is essential for treatment by ultra-violet light or catadyn silver, and advisable for ozone if it is to be used at a reasonable cost. The outstanding advantages of ozone are: (1) it yields a fine colourless table water in a very short time, and (2) if excess is removed it leaves no taste or odour whatsoever. The water is then

sterile but is left with no bactericidal action; on the other hand any residual ozone may attack the metal pipes through which it is to be distributed. Whilst the sterilising action of ozone is much more rapid than that of chloramine there seems to be some doubt whether it is as effective against the leptospira of Weil's disease which, from its association with rats, is likely to be present in water which has been contaminated with sewage or to which rats can gain access.

CORRESPONDENCE

REGULATION OF PROSTITUTION

To the Editor of THE LANCET

SIR,—The report of the recent Congress of Dermatology at Budapest (THE LANCET, Nov. 9th, p. 1078) and your leading article on it in the issue of Nov. 30th will interest many who consider the socio-political aspects of medicine. At that congress, which was called international, "It was accepted as a fact that syphilis and gonorrhoea could be made extinct throughout the world within a single year if all who suffer from them would have themselves fully treated. Starting from this principle the Congress proposed the application of legal penalties and State control of treatment, together with the regulation of prostitution." (My italics.) I wonder how many nations had representatives there. What "legal penalties" may mean, I do not know; it probably means penalties for not reporting for cure, and/or for transmission of disease. The first assumes capacity for self-diagnosis; the second implies denunciation of the supposed donor.

Regulation means the licensing of prostitutes, either in brothels or otherwise, to practise their "calling," with enforcement of medical examination at short intervals for detection of disease. Here, as well as in Scandinavian countries and elsewhere, this method has been discarded. France stands at the head of European countries which still regulate prostitution. Germany abolished the system in 1927, but seems to have reverted to it. And I am informed that in other countries there is a tendency to gravitate back to that useless and offensive system.

What are the facts? It is, I believe, undeniable that venereal disease is more prevalent where regulation is in force than where it is not. And the reasons are plain enough. Brothels are a standing temptation to young men, who understand that the government regards them as a necessary evil (if not a necessary good). The examination of the women is a perfunctory procedure, taking a minute or two to each person, which cannot guarantee freedom from disease, and is more likely (through instruments) to transfer disease from one woman to the next. Apart from that, women do not like being dragooned and harassed; so in any great town the "clandestines" are generally about ten times as numerous as the licensed; so that the examination, even if efficient, would only touch a fraction of the prostitutes. Regulation, in fact, is not only a failure from the side of public health, but is a stimulant to debauchery, and, incidentally, is the prime factor in the promotion of the traffic in women.

It is said that if you abolish regulation where it exists and close the *maisons tolérées*, turning the women on to the streets, there will be an increase of disease. This might be so (though not necessarily) if no steps are taken to give due notice of the proposed closure

and to find some means of livelihood for the brothel inmates. But in fact the abolition of regulation has not so resulted where it has been properly tried. There must always be some difficulty attending the abolition of a great evil. The conditions of life in the brothels are revolting; the licensed women are under the control of the *police des mœurs*; blackmail and every kind of abuse is lamentably common; brothels, with their enormous profits to the tenanciers, are a source of corruption in public life.

Am I then advocating free prostitution as a preferable alternative to the regulation system? Yes; so long as there is no persistent molestation in the streets, by either sex, nor public indecency. Prostitution is not a crime in law, and ought not to be under any legal restrictions that are not applicable to all. Free prostitution is better than regulated, whether for public health or public morals. In this country, for better-thinking people of all classes, prostitution (so different from mid-Victorian days) is becoming obsolescent as being beneath human dignity. Its place is being taken, no doubt, by temporary liaisons of a more or less affectional character. That is not ideal; but, at any rate, it is a step in advance from crude promiscuity. Social habits improve slowly.

As to Budapest, no congress can be representative of international thought which seeks to adopt methods which have already been rejected, with advantage, by the most progressive countries in the world.

I am, Sir, yours faithfully,

Harrow, Dec. 3rd.

DOUGLAS WHITE.

COLLAPSE THERAPY IN PLEUROPNEUMONIA

To the Editor of THE LANCET

SIR,—Having used artificial pneumothorax in the treatment of 45 cases of acute lobar pneumonia, and several cases of acute pleurisy without definite pneumonia, I venture to make some comments on the interesting articles by Dr. Cedric Shaw and Dr. W. E. Robertson in your issue of Dec. 7th. I have obtained results as dramatic as those described by Dr. Shaw in the relief of pleural pain, but as the relief does not occur in every case I cannot agree with him that "there remains the universally accepted clinical observation that separation of the visceral and parietal pleural layers, whether by fluid or by air, results, without exception, in the disappearance of the pain of acute pleurisy."

It is commonly taught and generally believed that the pain of acute dry pleurisy is due to the rubbing together of inflamed pleural surfaces. There are many reasons, as Bray¹ has pointed out, for thinking that another mechanism exists—namely, pleural tension. For example, typical pleural pain may occur in a patient with a pneumothorax and a completely collapsed lung without pleural adhesions when the

¹ Bray, H. A.: Amer. Rev. Tuberc., 1926, xlii, 1.

friction element is obviously absent. This pain may cease when effusion occurs, just as it does in cases with pleural friction. On the other hand, patients are sometimes seen with loud and palpable, but painless, basal pleural friction. I note that Dr. Shaw gave a refill when a faint pleural rub reappeared in both his cases, but he does not say whether pain accompanied this rub. I have observed that when pleural pain recurred after artificial pneumothorax (600 c.cm.), X ray examination sometimes showed that the pleural surfaces were still separated. I should mention that in all my cases the presence of pneumothorax has been confirmed by X ray examination taken, when possible, in full expiration. Dr. Shaw himself says that neither the theory of pleural friction nor of pleural tension is universally applicable. It is then perhaps unwise to claim that a measure which may eliminate one of these factors only will invariably relieve pleural pain. The problem is not merely that of separating pleural surfaces.

About the treatment of pneumonia it is difficult to dogmatise, especially when the type of the causal organism is not specified. Many writers—e.g., Coghlan²—have based their claims for the efficacy of pneumothorax in lobar pneumonia on small numbers of cases. Dr. Robertson's series is, I believe, the largest. I am reluctant to draw definite conclusions from my 45 cases (about half of which were not typed), but I would agree that pneumothorax does not appear to have any influence, favourable or otherwise, on the outcome of acute lobar pneumonia, although it may relieve pleural pain in some cases. Incidentally, the credit for first suggesting the employment of artificial pneumothorax belongs to James Carson of Liverpool.³ Typical cases of lobar pneumonia with definite clinical and radiological signs can end by crisis within five days of the onset. Pneumothorax given to such cases might be credited with the cure. I feel that some of the enthusiastic statements of the advantages of pneumothorax lack the restraint which a fuller knowledge of the natural history of the disease would bring.

The proviso with which your annotation wisely concludes, that artificial pneumothorax "should only be adopted if pleural pain and respiratory distress aggravate incipient disease," precludes pneumothorax treatment in many cases, particularly those of the hospital class, since they are well past the incipient stage when first seen.

I am, Sir, yours faithfully,

C. ALLAN BIRCH.

London, N., Dec. 9th.

PHILOSOPHY AND AFFAIRS

To the Editor of THE LANCET

SIR,—You were kind enough four years ago to publish a letter appealing for support of the British Institute of Philosophy, which was founded in 1925 with the late Lord Balfour as its first president. The appeal was based on the existing disorganisation of beliefs in fundamental principles in every department of life, and the need of a cultivation of systematic thought that has the most intimate bearing on practice. Since then this need has not diminished. We have seen in the interval the rise of forms of political life which appear to deny those constructive forces which have been generally regarded as of first importance. On this and on other accounts we need to consider what the primary and wrong in the conduct of nations should be.

We therefore in the tenth year of the Institute venture to ask again for your hospitality with a view to making its work better known and obtaining further support that will enable it to extend its activities. These consist at present of the publication of the quarterly review *Philosophy*, the holding of courses of public lectures, the organisation in London and other cities of reading circles, and the arrangement of monthly evening addresses by leaders of opinion in various departments of thought—scientific, æsthetic, political, moral, and religious. Those of your readers who would desire to become members of the Institute (the subscription is £1 1s., which covers the price of the quarterly review) or to obtain further information with regard to it are invited to communicate with the Director of Studies at the rooms of the Institute in University Hall, 14, Gordon-square, London, W.C.1.

We are, Sir, yours faithfully,

S. ALEXANDER,
ARTHUR EDDINGTON,
WILLIAM EBOR,
W. R. INGE,
A. D. LINDSAY,

OLIVER LODGE,
J. H. MUIRHEAD,
RUSSELL,
RUTHERFORD,
HERBERT SAMUEL.

London, Dec. 3rd.

COD-LIVER OIL TREATMENT OF BURNS

To the Editor of THE LANCET

SIR,—Since reading Dr. J. P. Steel's account, in your issue of August 10th (p. 290), of his successful treatment of severe burns with cod-liver oil I have used the oil in several cases of severe burns of the eyelids and in one case of a very bad burn of the eyeball with caustic liquid. The first (and worst) case was brought in while I was reading his article. All these cases, really bad ones, have healed in the most remarkable way. The worst of them was back at work again in about a month, and none of them shows any signs of scarring, symblepharon, or discoloration of skin—in fact no sign of having been injured, except that of loss of eyelashes where the lid margins were burnt through. No other treatment was used except the wiping away of mucous discharge, and an occasional drop of atropine. Shortly after my first case I tried the oil as a sort of last resource on the left eye of a child, aged 4, who had been under continual treatment for about 12 months for an unusual chronic ulceration of the cornea accompanied with much pain, œdema of the lids, and photophobia. Drops of oil were instilled every three hours and the result was surprising; after the first day the child opened the eye for the first time for many months, and the whole cornea was healed up in four days.

Since then I have tried cod-liver oil in various corneal conditions and have had excellent results in dendritic ulcer, in which pain is relieved at once and very rapid healing takes place with no other treatment except the oil drops every three or four hours. Chronic keratitis, small ulcers caused by foreign bodies, phlyctenular conditions, and corneal roughness and superficial ulceration of trachoma are also suitable for the treatment. I tried it in one case of hypopyon ulcer, but this was such a severe infection that it was impossible to omit other more drastic remedies, so that the ultimate good result cannot be claimed entirely for the use of the oil.

Application of the treatment is very simple. For burns of the lids the first dressing is a pad of lint saturated with the oil, covered with jaconette or oiled silk and a bandage, the patient being instructed to get a bottle of the oil and to keep the pad moist.

² Coghlan, J. J.: *THE LANCET*, 1932, I., 13.

³ *Essays, Physiological and Practical*, Liverpool, 1822.

with it, leaving the pad undisturbed for 24 hours. There is never any septic discharge. The pad is changed every 24 hours. For use as drops: at home the easiest way is to pour the oil from a warmed teaspoon, rather than use a dropper which is difficult to keep clean, every three or four hours. One remarkable point is the almost instant relief from pain.

I hope that others will try this treatment, for even if unsuccessful it has the advantage of being harmless.

I am, Sir, yours faithfully,

Liverpool, Dec. 9th.

EDGAR STEVENSON.

FEVER HOSPITALS

To the Editor of THE LANCET

SIR,—In the annotation headed Fever Hospitals. Past and Future, which appears in your issue of Dec. 7th (p. 1308), there is a statement against which I desire to protest, to wit: "The bed-spacing which is now the rule would even thirty years ago have seemed fantastically extravagant or divinely fortuitous." Forty years ago the medical superintendents of the fever hospitals of the Metropolitan Asylums Board recognised and insisted upon the necessity of as ample floor-space in the wards as is provided at the present time. As you were kind enough on a previous occasion to publish a letter from me on this subject (see THE LANCET, 1933, ii., 1448) I will not now trespass further on your space, except to say that I had the pleasure of listening to Dr. Harries's admirable address and to the best of my recollection he did not use the words I have quoted.

I am, Sir, yours faithfully,

Hampstead, Dec. 9th.

E. W. GOODALL.

* * Dr. Harries was referring not to bed spacing in the open ward but to the recent provision of ample isolation accommodation and we regret the false impression given in our necessarily brief note. The words "divinely fortuitous" were not his. We take this opportunity of amending other statements in the annotation. After remarking that the decline in the fatality-rate from diphtheria had reached the limit, Dr. Harries added that the disease is now preventable. Dr. Harries did not say that instruction in fevers is at present quite inadequate. What he did say was that knowledge of clinical work of fever hospitals was based upon a limited number of attendances at a fever course which provided no opportunity for day-to-day observation of the patients. The phrase quoted in the annotation about the "apparatus and protocols of a scientific paper" was used specifically in relation to the unsatisfactory literature of the vaccine therapy of whooping-cough.

—Ed. L.

BOTULISM

To the Editor of THE LANCET

SIR,—In your issue of Sept. 28th, in collaboration with Dr. Jones-Davies, I reported a case of botulism. May I be permitted to add a few further details which have since been worked out?

Since our report the organism from the nut brawn has been isolated in pure state and a toxin prepared from it in a similar manner to that which was prepared from the impure culture; this pure toxin killed a guinea-pig within 24 hours in a dose of 0.001 c.cm. Through the kindness of Mr. Dalling, of the Wellcome Physiological Research Laboratories, Beckenham, I was able to obtain monovalent botulism antitoxic sera of the three types A, B, and C. Protection experiments on guinea-pigs gave the following results.

One cubic centimetre of type A antitoxin protected against 0.001, 0.01, and 0.1 c.cm. of the pure toxin but not against 1.0 c.cm. One cubic centimetre

of both type B and type C antitoxin failed to protect against 0.001, 0.01, 0.1, and 1.0 c.cm. of pure toxin, though in the case of the smallest dose of toxin life was prolonged to six days by type B antitoxin and to 19 days by type C antitoxin. The organism is thus a clear-cut type A. The pure strain of the organism fermented with gas production: lactose, glucose, dextrose, and salicin. Fermentation of the last-named is said to be distinctive of type A strains. In glucose agar, however, the deep colonies were not of the compact, discoid nature said to occur with type A, but rather woolly like B or C strains.

The finding of type A in this case is of interest in view of the fact that while the Loch Maree outbreak was due to a type A. Meyer and Dubowsky in their report, in the *Journal of Infectious Diseases* (1922), on an examination of soils and vegetables found type B present, but type A consistently absent in Europe.—I am, Sir, yours faithfully,

Wimpole-street, W., Dec. 3rd. C. RICKWORD LANE.

A TEST FOR CANCER

To the Editor of THE LANCET

SIR,—A few years ago Dr. J. Round designed a test for cancer on Bendien's lines by the use of urine instead of blood. Dr. Round worked with a chemist, Mr. D. A. Ruddle. Dr. Round as director and Mr. Ruddle as chemist for tests and research are now working at a laboratory at No. 12, Park-crescent, W.1. The findings here on cancer urines and suspected cases have been proved to be satisfactory clinically by a number of medical men and have usually confirmed other tests. It is often found preferable to use urine as any one can take a specimen of early morning urine. The patient also prefers this method to having blood taken from a vein.

The undersigned can speak from personal experience of the advantages of the test, not only can malignancy be judged by flocculations at a certain degree of pH, but by the presence of other substances. Further, if the presence of malignancy is not indicated further tests can be made to aid diagnosis. In doubtful cases an additional test can be made from faeces, as in malignancy the amount of zinc in faeces is decreased. Practitioners desiring to use the services of the laboratory should send 4 oz. of urine with a little chloroform added to Mr. D. A. Ruddle, 12, Park-crescent, W.1. Fee £1 1s. Research on the nature of cancer has been carried out and this could be extended if funds were available. The support of the profession is requested for what may lead to still more useful research.

Those desiring further information should address Dr. J. Round, 67, New Cross-road, London, S.E. 14.

We are, Sir, yours faithfully,

GEORGE BURFORD, JNO. ROUND,
R. M. LE HUNTE COOPER, C. E. WHEELER,
W. GUYON RICHARDS, H. WYNNE THOMAS.

London, Dec. 6th.

"A CURIOUS EPIDEMIC OF SORE-THROAT"

To the Editor of THE LANCET

SIR,—I have been using in my practice diphtheria antitoxin (P. D. and Co.) in cases of severe tonsillitis and sore-throat with very gratifying results. The temperature generally falls to normal after two injections; the patient feels more comfortable. I think that in the presence of slight throat signs and mild temperature, quite apart from the presence of diphtheroid bacilli, antitoxin will prove valuable.

I am, Sir, yours faithfully,

S. R. BHAT, M.B., B.S.

Amraoti (C.P.), India, Nov. 15th.

HÆMOPHILIA AND INFANTILE MORTALITY

To the Editor of THE LANCET

SIR,—In your last issue (p. 1289) Dr. W. M. Priest describes a case of hæmorrhage within the central nervous system in a case of hæmophilia, a somewhat exceptional occurrence. In his case the family history was negative, or rather was unobtainable owing to the ignorance of the patient's mother as to essential facts. Dr. Priest was however able to note that the patient had 12 brothers "five of whom died in infancy but there was nothing to suggest hæmophilia as a cause of death." That is to say, out of 13 male infants 5 had not survived infancy, a mortality of over 38 per cent. Such a death-rate in male infants in a hæmophilic stock is full of significance. It has already been noticed and commented on in an article of mine entitled "A Pedigree of Hæmophilia" (Brit. Jour. Child. Dis., 1932, xxix., 276) from which with your permission I will take the following extract:—

"Out of 66 persons, some 14 died in infancy or early childhood (excluding the hæmophilic disasters, which would make these figures even greater), as often as not the cause of death being described as convulsions. If the obvious cases of hæmophilia are excluded from both sides of the calculation the figures are even more striking, the wastage of child life being 14 out of 59 individuals, or nearly 24 per cent., in children born throughout three generations in different environmental conditions in two different counties. Of the fatal cases of convulsions, 5 out of 7 occurred in male children, and it seems possible that some, at least, of these children dying convulsed may themselves have been cases of hæmophilia, dying in this way before the familial stigma had obtained any opportunities to show itself in any of its orthodox manifestations. It seems reasonable to suggest the possibility that some of them may have had an intracranial hæmorrhage, irritating the brain substance, and so leading directly to the convulsions which proved fatal. Perhaps, indeed, every case of convulsions in a male infant in a hæmophilic family should be considered as suspect from this point of view."

From Dr. Priest's figures, where out of 13 male children 5 died in infancy and 1 grew up with hæmophilia, it may be surmised that his case is not so much one where his patient was the subject of sporadic hæmophilia, as one where the mother was the carrier of the taint which she transmitted to 6 out of 13 (or 46 per cent.) of her male offspring, a percentage which accords with expectation.

I am, Sir, yours faithfully,

Manchester, Dec. 7th.

W. J. RUTHERFURD.

EXPLOSION IN OPERATING THEATRES

To the Editor of THE LANCET

SIR,—In connexion with the letter from Sir Joseph Petavel your readers may be interested to learn that the subject has for some time past received attention from the Anæsthetics Committee appointed jointly by the Medical Research Council and the Royal Society of Medicine. This committee has had the benefit of coöperation with the National Physical Laboratory as regards the electric causation of the explosions. The committee has been able, largely owing to the investigations carried out for it by the late Prof. H. B. Dixon, to point out to anæsthetists dangers which had not hitherto been apparent, particularly in connexion with the mixture of nitrous oxide with other vapours. As regards the determining cause of the explosion of an anæsthetic mixture in practice this appears to arise in one of two ways, either from electrification of the table, &c., or from faulty electrical apparatus, small lamps, suction

machines, and so on. The anæsthetist has learned which of his agents to avoid in the presence of open flame, cautery, diathermy, &c. In the absence of these things he naturally expects to work without the risk of getting an electric shock or having his apparatus blown to smithereens, whatever anæsthetic he chooses to employ. We may hope that the efforts of the National Physical Laboratory will result in this assured liberty.

I am, Sir, yours faithfully,

J. BLOMFIELD,

Dec. 9th.

Chairman, Anæsthetics Committee.

TREATMENT OF HÆMATEMESIS

To the Editor of THE LANCET

SIR,—I was much interested in Prof. Meulengracht's paper in your issue of Nov. 30th, as the basis of his treatment of hæmatemesis corresponds fundamentally to my own. Although I think that during the actual time when hæmatemesis takes place no food at all should be given because the stomach secretions diminish considerably during starvation, I agree that no notice need be taken in respect of melena. I am prepared also to accept that "light" food is permissible during hæmatemesis, as it must remain, for the time being, a difficult point to decide whether food in the stomach interferes with the arrest of the hæmorrhage, and I should not be surprised that the presence of solid or semi-solid food has rather the opposite and desirable effect. As the period of practical starvation is only a relatively short one and should not exceed 48 hours, Prof. Meulengracht will agree that there cannot be a very great loss of energy due to lack of food. However, when it comes to the point when food has to be administered, I am afraid I cannot agree with Prof. Meulengracht's diet. As soon as I am satisfied that the hæmorrhage has been arrested, I have no hesitation in putting the patient on a fat-free régime, and up till now I have had no reason to regret my action. In any case, one need not hesitate to administer glucose ad lib. from the very commencement of treatment.

A point of the utmost importance which I should like to emphasise is the paramount necessity of distinguishing acute from chronic ulcer, as both prognosis and treatment must necessarily depend on their differentiation. The correspondence which followed Mr. Gordon-Taylor's recent contribution in your columns, if it did nothing else, illustrated the need to distinguish between the acute and chronic ulcer in reporting results. It would then be realised that a general and different method should be applied to the treatment of cases of acute ulcer which, as I have attempted to show, behaves in every respect as an experimental ulcer, and is either toxic or infective, or, at any rate, systemic in origin. As far as the chronic ulcer is concerned, which is due to active local mischief, these are the only cases where sometimes the physician may require the help of the surgeon. Prognosis will always be influenced by the general condition of the arteries and must therefore be taken into consideration.

Finally, may I draw your attention to the fact that sometimes one comes across cases of hæmorrhage from acute ulcers in patients who have had a long history of dyspepsia with a cured chronic ulcer. I have seen several of these and found it most difficult to convince the doctor in attendance that the hæmorrhage was not due to the old chronic ulcer, but caused entirely by a new condition independent from and superimposed on the old one.

I am, Sir, yours faithfully,

Bolton-street, W., Dec. 7th.

J. JACQUES SPIRA.

THE MAURICE CRAIG MEMORIAL

WE have received from the hon. treasurer of the Sir Maurice Craig memorial fund the following letter:—

"When Sir Maurice Craig, the distinguished psychiatrist, died in January last, it was felt by his friends and colleagues that there should be some memorial of one who was a pioneer in the treatment of nervous and mental illnesses, and who contributed such invaluable knowledge to their early diagnosis and prevention.

"Sir Maurice was a great mental specialist, and with his name must be associated the importance now attached to rest and sleep in cases of nerve exhaustion, the use of small doses of a sedative over a long period, and to the toxic focus as a cause of certain severe mental disorders. He never failed to attach the correct value to the physical condition of his patients, and knew the relative value of the smallest symptoms. His whole life was one of consistent personal service, and his name will be linked with the prevention, and progress in treatment, of mental and nervous diseases. He was never happier than in 'opening up the lives' of young people who in one way or another were being repressed or thwarted, or when highly-strung children were brought to him and he was able to protect their nervous systems against the effects of strains and stresses. His power of throwing the whole of himself into the particular troubles of the individual, which gave him his wonderfully understanding and strengthening sympathy, combined with his charm, were invaluable assets in gaining the confidence and affection of patients.

"Sir Maurice Craig's greatest public work in the field of mental health was in two directions: his part in establishing the National Council for Mental Hygiene, and in the foundation (with the funds generously placed at his disposal by Sir Ernest Cassel) of the Cassel Hospital for functional nervous disorders. Remarkable evidence of Sir Maurice's hold upon the public was seen a few years ago when he made a broadcast appeal on behalf of the National Council. This appeal produced an overwhelming number of letters from listeners in all parts of the country and from all sections of the community, notably among the poorer classes, who emphasised their appreciation of the work done for the mental health of the nation by Sir Maurice and the Council over which he presided.

"The friends of Sir Maurice Craig therefore feel that it would be in keeping with his wishes that sums received for the memorial should be entrusted to the National Council for Mental Hygiene for the furtherance of the work which he had so much at heart, and to found a 'Maurice Craig House' which would become the established centre of the National Council. Such a centre should greatly assist in co-ordinating the work of all voluntary bodies dealing with mental health and the prevention of nervous and mental disorders, and provide, for instance, much-needed meeting rooms for the National Council's various research committees, a library, and an inquiry department to supply the public with particulars concerning treatment facilities, training in all branches of mental health, information, and literature. It is proposed that as a beginning some temporary premises shall be taken with the object of establishing a permanent 'Maurice Craig House' when sufficient funds have accumulated.

"We feel sure that in addition to his professional colleagues, friends, and patients, there must be many among the general public who would wish to co-operate with us in giving permanence to Sir Maurice's work for the alleviation of human suffering, and that in a manner which would do honour to his memory. Contributions to the fund, which should be marked 'Sir Maurice Craig Memorial Fund,' will be gratefully acknowledged by Dr. Eric Wornum, 121, Harley-street, London, W.1, who has consented to act as hon. treasurer."

The letter is signed by the Archbishop of Canterbury.

Lord Wakefield of Hythe, Lord Southborough, General Sir Walter Braithwaite, Sir Reginald Ward Poole, Dr. A. Helen Boyle, Sir Farquhar Buzzard, Lady Limerick, and the Bishop of Chichester.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. A. C. Paterson to *Pembroke* for R.N.B.
Surg. Lt.-Comdrs. J. M. Sloane to *Fernon*, E. E. Malone to *Excellent*, and G. Phillips to *Boscawen*.
Surg. Lts. C. N. H. Joynt and W. J. M. Sadler to be Surg. Lt.-Comdrs.

ROYAL ARMY MEDICAL CORPS

MILITIA

Maj. F. G. Foster retires on attaining the age limit and retains the rank of Maj.

TERRITORIAL ARMY

Capt. F. McL. Richardson to be Div. Adj., 51st (Highland) Div., vice Capt. S. R. M. Mackay, vacated.

Supernumerary for service with O.T.C.—Maj. H. P. Malcolm, M.C. (empld. Queens Univ. (Belfast) Contgt. (Med. Unit), Sen. Div., O.T.C.), resigns his commn, and retains his rank, with permission to wear the prescribed uniform.

Lt. G. Green to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Lt. C. A. Cromar, from T.A. Res. of Off. (4th Bn. Gordons), to be Lt.

Lt. A. S. Gough resigns his commn.

ROYAL AIR FORCE

Squadron Leader H. Penman to Central Medical Establishment, London, for duty as medical officer.

Flight Lt. J. Hill to R.A.F. Station, Singapore.

Dental Branch.—Squadron Leader G. A. Ballantyne, D.F.C., to R.A.F. Depot, Uxbridge, for duty as Senior Dental Officer.

INDIAN MEDICAL SERVICE

Maj. R. C. Phelps to be Lt.-Col.

The undermentioned officers have vacated appts. in India:—

D.A.D.H.—Capt. A. B. Guild, I.M.S.

D.A.D.P.—Maj. W. D. B. Read, I.M.S., and Lt.-Col.

D. T. M. Large, R.A.M.C.

The undermentioned appts. have been made:—

D.A.D.H.—Capt. V. E. M. Lee, I.M.S.

D.A.D.P.—Maj. R. A. Hepple, M.C., R.A.M.C.

The Commander-in-Chief has made the following appointments:—

Colonel R. P. Lewis, D.S.O., as Assistant Director of Medical Services, Deccan District, in place of Colonel E. C. Hodgson, D.S.O., retired.

COLONIAL MEDICAL SERVICE

Dr. D. H. K. Lee has been appointed Professor of Physiology, King Edward VII. College of Medicine, Singapore; Miss J. McDowall, M.B., Ch.B., Medical Officer, Palestine; Dr. A. A. Peat, Medical Officer of Health, Jamaica; and Dr. J. A. Waterman, Medical Officer (Grade I.), Trinidad.

DEATHS IN THE SERVICES

The death occurred on Dec. 2nd at Cheltenham of Lieut.-Colonel RICHARD PRATT BOND, who was born in 1856, received his medical education at King's College, London, and qualified L.R.C.P. Edin. 1880 and M.R.C.S. Eng. 1881. After serving as house surgeon at King's College Hospital and resident medical officer at the Royal Free Hospital, he joined the Army as surgeon captain in 1883, becoming lieut.-colonel in 1903 and retiring in 1911. He saw service in the Sudan from 1884-88 and in South Africa 1899-1902, receiving the Queen's medal with two clasps. In the European war he was re-employed as an A.D.M.S. at home.

OBITUARY

CHARLES RICHEL

Prof. Charles Richet died quietly at his home in Paris on Dec. 4th, after he had been ailing for some time from broncho-pneumonia. The son of Prof. Alfred Richet, he was born in Paris in 1850. His earlier works were chiefly concerned with physiology, and it was in 1887 that he was appointed professor. In 1898 he was elected to membership of the Academy of Medicine, and in 1914 to membership of the Academy of Sciences, whose president he was in 1933. Among the many honours awarded him was the Nobel Prize which he received in 1913.



PROF. RICHEL

[Photograph Wide World]

What is, perhaps, the most striking feature of Richet's long and distinguished career is the variety of the subjects to which he made fundamental contributions. He was a physiologist, pathologist, bacteriologist, psychologist, engineer (he devised an aeroplane), statistician, author, dramatist, and much else. The interest he took in every subject brought to his notice was characterised by a remarkable freedom from hard-

and-fast, pre-conceived notions. There was something paradoxical in the encyclopaedic dimensions of his knowledge and the facility with which he escaped from it all and with unhampered mind passed to new discoveries.

Richet's first physiological study concerned the composition of the gastric juice. Later, he investigated the physiology of animal heat and respiration, the control of the latter by the nervous system, and the regulation of the heat of the body by polypnoea and shivering. He showed that the respiratory exchanges are proportional to the surface of the body (Richet's and Rubner's law). In 1887 his investigations of cancer made him stumble on the discovery of anaphylaxis. He found in the tumour of a dog a staphylococcus resembling the *Staphylococcus albus* and growing easily on culture. This germ was injected under the skin of dogs in an attempt to reproduce the tumour, but the effect was a simple abscess which healed quickly. When, however, this germ was injected under the skin of rabbits, it provoked gangrenous abscesses, rapidly followed by a septicæmia which proved fatal in a day or two, and sometimes only in a few hours. Hence the qualifying adjective "pyosepticus" applied to this staphylococcus. It now occurred to Richet to introduce into the peritoneal cavities of rabbits the blood of dogs into which the *Staphylococcus pyosepticus* had previously been injected. The results of these experiments and the reflections to which they had given rise were communicated to the Academy of Sciences on Nov. 5th, 1888, by Richet and Héricourt. The title of their communication

was "Transfusion Péritonéale et l'Immunité qu'elle Confère." The gist of this thesis was that the blood of an animal immunised against an infection can, if introduced into another animal susceptible to the infection in question, enable this animal to acquire immunity to it. What was first known as hæmotherapy soon came to be called serotherapy. On Dec. 6th, 1890, at the Hôtel-Dieu, Paris, in Prof. Verneuil's service, Richet gave the first serotherapeutic injection into a human being. It was hoped that this discovery would be applicable to tuberculosis, but the researches pursued by Richet in this field proved disappointing. Meanwhile the same clue was yielding rich discoveries to Behring and Kitasato who had followed it in their therapeutic studies of tetanus and diphtheria. By 1899 the number of specific serums for the treatment of various diseases had risen to 45. When, in 1932, Richet reviewed his life's work in a communication to the Academy of Medicine, he did not venture to invade the realm of astronomical figures in an attempt to estimate the number of specific sera prepared up to date. But what he was successful in showing was the wealth and variety of the therapeutic advances which, since 1888, have their more or less distant roots in his original discovery. He dealt on this occasion not only with such definite achievements as the prevention of measles by the injection of the serum of convalescents from this disease, but also with his hopes that tuberculosis, syphilis, and cancer may all ultimately yield up their secrets in response to the clues he has provided. With regard to cancer he said: "It is also likely that anti-cancer serotherapy which, since 1895, has given us most encouraging results, has not said the last word, and that the investigations undertaken on every side with so much ardour to illuminate the ætiology of the disease will find their application in the preparation of a curative serum." On the same occasion he referred to the future of the serum treatment of tuberculosis; and he noted that encouraging results have already been obtained with tuberculous rabbits treated with the serum of goats or sheep into which filtrates alone of a culture of BCG, or such filtrates combined with a BCG culture, had been injected.

As recently as February, 1935, Richet took a prominent part in a discussion in the Academy of Medicine on the French birth-rate. The Russian statistician, Roubakine, had submitted to the Academy of Medicine figures and opinions which were eminently distasteful to most Frenchmen. Richet did not mince matters in his criticism of the Russian statistics which he compared with those of a certain humorist who published a work on the innocuity of falls from great heights, his argument being based on a dozen perfectly authentic cases in which falls from the fifth storey had inflicted only scratches.

Richet showed much courage and contempt for ridicule in his study of subjects supposed to be occult. He justified these studies by the strictly scientific technique he applied to them. His "Essai de Psychologie Générale" was published in 1890. In the same year he wrote "Possession" which was followed in 1892 by "Sœur Marthe." In 1893 he wrote "A la Recherche du Bonheur," in 1894 "A la Recherche de la Gloire," in 1895 "Conscience d'Homme," in 1898 "La Douleur des Autres," and in 1902 "Pour les Grands et les Petits." His interest in sociological problems found expression

in his work "Les Guerres et la Paix. le Passé de la Guerre et l'Avenir de la Paix." The title of a comedy he wrote was "Socrate." In 1926 the Academy of Medicine celebrated his scientific jubilee, and on this occasion Marshal Foch decorated him with the insignia of Grand Officer of the Legion of Honour.

**HAROLD PRINGLE, M.D. Dub., F.R.C.S.I.,
F.R.C.P.I.**

LATE KING'S PROFESSOR OF THE INSTITUTE OF MEDICINE AND
PROFESSOR OF PHYSIOLOGY, UNIVERSITY OF DUBLIN

THE retirement of Dr. Harold Pringle from his professorial duties in the School of Physic, Trinity College, Dublin, was mentioned in a recent issue of THE LANCET (Nov. 30th. 1935. p. 1261). He died on Dec. 7th at his residence, Sandford Grove, Dublin. Although for many months past no hope could be held out of recovery, his death has caused great grief to his friends and colleagues.

Harold Pringle was born at Clones, Co. Monaghan, nearly sixty years ago, and educated at Trinity College, Dublin. He qualified in medicine and surgery in 1899, and proceeded to the degree of M.D. in 1902, in which year he also took the diploma of F.R.C.S.I. A pupil in physiology of John Mallet Purser, one of the most notable teachers of his time, Pringle's tastes lay toward scientific rather than clinical work. Having held some minor appointments he became assistant to the late Sir Edward Sharpey-Schafer at Edinburgh, and was subsequently appointed lecturer in histology in that University. During the European War he served in France, most of his duty being along pathological lines. In 1918 Sir William Henry Thompson, King's Professor of the Institute of Medicine in Dublin, lost his life in the mail steamer *Leinster*, sunk off the Irish coast by enemy action. Shortly after Pringle was elected his successor and held the post until ill-health compelled his retirement a few months ago. In 1922 the University of Dublin established a Professorship of Physiology and appointed Pringle to the post, without, however, making any alteration in his duties. For several years past his colleagues showed their appreciation of Pringle's capacity by electing him unanimously as representative of the professorial staff on the Board of Trinity College.

His onerous duties as head of a great teaching department occupied most of Pringle's time, and he performed those duties with complete efficiency. His pupils received his individual attention, and those who showed any special interest in physiology were given every help and encouragement to carry their studies further. As a consequence his pupils came to regard him as a real friend. His colleagues found him unselfish, sympathetic, helpful, wise in counsel, and full of common sense and shrewdness. In social life he was the most pleasant of companions, humorous, cultivated, a good talker, and a stimulating listener, being not only witty himself but the cause of wit in others.

Two years ago he lost, in rapid succession, his wife and his eldest son—a youth of great promise; while he realised that his own health was beyond hope of repair. The courage and cheerfulness which he showed to the end increased the love and respect of his friends.

ROBERT EARDLEY-WILMOT, M.B. Lond.

Dr. Robert Eardley-Wilmot died at the age of 86 on Dec. 3rd; 60 years ago he made a mark as a young man in obstetric medicine. He received his medical education at King's College Hospital, took the English double diploma in 1871, and graduated

in medicine in the University of London in the following year with the university scholarship and gold medal in obstetric medicine. He was appointed house physician and, later, resident accoucheur for the diseases of women and children at his hospital, and made some practical communications on his subject to the Transactions of the Obstetric Society and to our own columns. Shortly afterwards he went to Leamington where he became visiting medical officer to the Midland Counties Home for Incurables, and wrote an essay on the natural mineral waters of Leamington. On retirement he lived at Petworth, Sussex, and was appointed a J.P. for the county, while he had previously been made a J.P. for the county of Warwickshire.

**ANDREW MACKENZIE ROSS SINCLAIR, M.B.,
C.M. Aberd.**

Dr. Ross Sinclair, who died late in November, was a successful and popular practitioner in Fulham and Wandsworth for the past 30 years. He received his medical education at Aberdeen, and graduated M.B., C.M. in 1893, having secured many prizes and medals in the course of his career, both in preliminary and final subjects. Shortly after graduation he began practice in London and served as clinical assistant at the Chelsea Hospital for Women, the St. Mark's Hospital, St. Peter's Hospital, and the West London Hospital; thus he possessed a wide range of practical knowledge when he started as a general practitioner. He soon acquired a large connexion and a high reputation in his locality, while he did much voluntary service outside his professional engagements as medical adviser to athletic clubs, in which connexion he was also surgeon to the Hurlingham Polo Club. He leant strongly towards specialism in the direction of nose, ear, and throat diseases, was surgeon to the ear, nose, and throat department of the L.C.C. school clinic at Bagleys-lane, and at the time of his death he had commenced special practice in Queen Anne-street. Dr. Sinclair was 69 years of age.

EDWARD ROBERTS, M.R.C.S. Eng., L.S.A.

THE death occurred recently in a London nursing-home, after operation, of Mr. Edward Roberts, for many years surgeon to the Manchester Royal Eye Hospital. He was 78 years of age. He received his medical education at Guy's Hospital, and obtained his English diplomas in 1883. In that year he obtained honours in the intermediary examination for the M.B. Lond. but did not proceed to graduation. He was appointed resident obstetric officer to Guy's Hospital, after filling which post he became house surgeon to the Royal Eye Hospital, Manchester. Here, after five years as an interne, he was elected surgeon to the hospital and also ophthalmic surgeon to the Chorlton Union Hospital. During this period he contributed articles on his subject to the Transactions of the Manchester Pathological Society and to our own columns. On retirement from Manchester he went to live at Aberlloelwyn, near Aberystwyth, and became a prominent supporter of the Aberystwyth Infirmary and Cardiganshire General Hospital, of which institution he was president at the time of his death.

WE noted in a recent issue (August 17th, p. 405) the celebration of the centenary of Dr. Griffith Evans, and took the occasion to write a short biography. We regret to learn that Dr. Evans died on Saturday last, Dec. 7th, at Brynknallt.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

The Debate on the Address

In the House of Commons on Dec. 4th, in the resumed debate on the Address, Mr. ARTHUR GREENWOOD said that if there were to be educational developments, improvements in the health services, and better housing for the people no one would be more pleased than the Labour Party. They were grateful for these proposals in the King's Speech—for what they were worth—but considered that the Speech lacked coherence. The old economic forces could no longer be allowed to operate in the way they had done in the past: the country must either plan or perish. There must be planning under public ownership and public control, with public spirit in the public interest, and it was because the present Government could not possibly live up to that kind of policy that it would be strenuously opposed.

Sir FRANCIS ACLAND said he was disappointed that there seemed to be no prospect of further legislation on housing. What was said in the Gracious Speech came simply to this, that the Acts passed last year and previously would be allowed to take their course. That was really not enough. It was hopeless to expect that houses would be built at rents which working-class people could afford to pay in country districts under any legislation now on the Statute Book.

Mr. F. ANDERSON said that medical officers of health were stating that the application of the means test was leading to a high maternal death-rate, increasing tuberculosis, and damaging the nutrition of children. He appealed to the Government to look at this question from a humanitarian point of view.—Viscountess ASTOR said that Mr. Anderson had referred to the malnutrition of the children, but it was one of the glories of the National Government that the health of the country had never been better than it was last year. They had not got to the bottom of the question of maternal mortality. The Government in the Gracious Speech had taken a welcome step in the proposal that there should be salaried midwifery, but she did not think that even that was going to solve the problem.—Mr. GALLACHER said that maternal mortality came from low wages and low unemployment relief. The mothers and the children had to suffer.

Sir FRANCIS FREMANTLE was glad that the Speech contained a definite promise of attention to physical education, and spoke of the useful work being done by a Lucas-Tooth gymnasium in Tooley-street for unemployed men from the northern coalfields and elsewhere. He hoped that in the general improvement of the school medical arrangements the greatest possible care would be taken to coördinate the system of school medical work with the general medical provisions for the health of the people, not merely during school years but afterwards, and that there would be a continuity of inspection and assistance. The gap before school life started had been largely filled, and he hoped that the other gap between school life and the employment age would now be filled. He regretted that there was no allusion to the bringing of town-planning schemes into force at once, while all the building was going on, and he hoped a plan for immediate action could be brought into effect. He wished to add his voice to the hopeful expectation of the measure to be introduced with regard to an organised service of salaried midwives, but pointed out that difficulties would have to be faced when the measure was introduced. It raised many thorny issues, including the whole question of a salaried service and how far the State was to support any one profession, however useful. How far would it be possible to arrange coöperation between the local authorities and the voluntary

associations so as not to spoil voluntary effort already in existence? If such coördination could be got he hoped all parties would join in giving the Bill an unopposed passage so that it might become law before the House rose for the summer holidays.

POVERTY AND MALNUTRITION

On Dec. 6th, when the debate was resumed, Mr. BOOTHBY said that the problem of poverty in the midst of plenty remained despite the revival in many industries during the past two years. The way to deal with this problem was to promote increased consumption by any and every means, rather than restrict production in order to keep up prices. The acid test of capitalism to-day was whether it could swing over sufficiently from the production of capital goods. The same problem was facing Russia. The problem was both international and national, and he thought that the last meeting of the Assembly of the League of Nations was very encouraging, because in the midst of a great international crisis they devoted three days to discussing the problem of under-nourishment and of increasing consumption throughout the world. What had we done in this country in this direction? The only real success had been the wheat subsidy. The milk position was getting better now, but until they started tackling distribution it had done nothing but raise prices to the consumer and diminish consumption. Experiment was admittedly necessary, but it seemed to him entirely wrong to approach this question, especially where subsidies were concerned, from the point of view of the producer rather than the consumer. He wanted to direct the attention of the House to the investigations reported by Sir John Orr, head of the Rowett Research Institute. He had, for instance, taken the average diet of some of the children in the town of Peterhead and compared it with the ideal diet which was not very much more expensive. He (Mr. Boothby) had seen rats fed on these diets and the difference between them was absolutely fantastic; moreover the relative immunity of the ideally fed rats from disease was very striking. Sir John Orr's tentative conclusion was that diseases due to malnutrition, or to wrong nutrition, were still very prevalent, particularly in the distressed areas. He had also come to the conclusion that food was much more important than housing. Often rent was paid at the expense of food, and he (Mr. Boothby) thought that the claims of housing were now emphasised a little too much and at the expense of food. Nobody denied that houses were valuable, but where the need was desperate food was much more important. Cheap food meant less poverty, less disease, and a lower cost of social services in the long run. Sir John Orr pointed out that 10s. per head per week taken as the expenditure on food, which was the lowest level, meant a consumption of one pint of liquid milk per head per week, which was grossly and totally inadequate. With wages of £2 and over the consumption at once rose to five pints per head; and the same thing happened with regard to eggs and fruit, with enormously beneficial results. Sir John Orr said that if the diet of all families with an income of less than £1 per head per week could be raised to the point attainable by this level it would mean 10 per cent. increased consumption, or £100,000,000 a year increase at retail prices. Sir John's suggestion was that there should be public utility corporations to manage the processing centres, and that they should buy direct from the farmer at a price to be fixed by them and sell direct to the distributor at a price also to be fixed by them and published, thus cheapening the cost of distribution and enabling the public to know exactly how much they ought to pay in the shops for their food-supplies. These proposals ought to receive the very serious consideration of the Government. He agreed with the Labour Party

that one step to be taken in the way of increasing general purchasing power would be the abolition of the family means test, though he did not believe that they could abolish the means test altogether. He also wanted to put in a plea for a more ambitious policy with regard to the provision of milk for children, especially in the distressed areas. Liquid milk should be given absolutely free to children under five years of age and to mothers as well. He would also like to see a much more intensive propaganda among the working classes with regard to the kind of food they ought to eat.

After further debate, Lord EUSTACE PERCY, Minister without Portfolio, said that the whole investigation on which Sir John Orr's figures were based was promoted and carried on by the Government and publication of those figures was designed to awaken public attention to the real need for and the possibilities of a policy of nutrition. If they repeated in the future the growth in consumption which was actually realised in the period 1924-32 they would for most of the commodities have solved nearly the whole problem. For only a few commodities like fish—and strangely enough cheese—would they need any very much greater increase in consumption than was realised in that earlier period. He claimed that the policy which the Government had been pursuing was in its broad outline the policy which was likely to assist such a growth in consumption.

The debate was adjourned.

Employment of Women and Young Persons

On Thursday, Dec. 5th, in the House of Commons Sir J. SIMON, Home Secretary, presented a Bill to make provision for the employment of women and young persons in factories and workshops on a system of shifts. The Bill was read a first time.

HOUSE OF COMMONS

THURSDAY, DEC. 5TH

The Needs Test Regulations

Mr. GRAHAM WHITE asked the Minister of Labour if it was his intention to publish the report of the Unemployment Assistance Board on the working of the needs test regulations.—Lieut.-Colonel MUIRHEAD, Parliamentary Secretary to the Ministry of Labour, replied: It is not yet possible to say precisely what documents will be laid before the House but it will be my right hon. friend's object in due course to supply hon. Members with all relevant information regarding the working of the present arrangements.

The Means Test and the Anomalies Act

Mr. MANDER asked the Minister of Labour what steps the Government proposed to take to abolish the household means test.

Mr. STEPHEN asked the Minister of Labour if he was aware of the widespread dissatisfaction in the country with the means test and the Anomalies Act; and whether he would introduce legislation at an early date for the abolition of the means test and the repeal of the Anomalies Act.—Lieut.-Colonel MUIRHEAD replied: The policy of the Government with regard to the means test has already been made clear. As was stated by the Prime Minister on Tuesday, it is hoped to lay proposals before Parliament not long after the end of the Christmas recess. There are no proposals in contemplation for repealing the Anomalies Act.

Sterilisation of Barbers' Implements

Mr. HICKS asked the Minister of Health if he was prepared to make an order to compel hairdressers and barbers to sterilise brushes, combs, razors, and other implements used in the course of their trade, with a view to preventing the dissemination of vermin and skin and other diseases.—Sir KINGSLEY WOOD replied: I am advised that as a general rule there is little risk of such a state of uncleanness in a hairdresser's establishment as to cause or promote the spread of disease, and as at present advised I do not think it is necessary to make such an order as is suggested by the hon. Member.

Mr. HICKS: Has the right hon. gentleman no information of cases where disease has been spread owing to the fact that the tools used in barbering have not been thoroughly sterilised?

Sir KINGSLEY WOOD: I have not heard of any cases.

Survey under Overcrowding Act

Mr. GRAHAM WHITE asked the Minister of Health if he could make a statement with regard to the progress made by local authorities in carrying out the survey of conditions of overcrowding under the Housing Act, 1935.—Sir KINGSLEY WOOD replied: I have fixed April 1st, 1936, as the date by which the survey should be completed, and I have every reason to believe that local authorities generally will complete the task in the allotted time. In most areas the survey has already started or will be commenced at an early date.

Public Assistance

Sir JOSEPH NALL asked the Minister of Health whether he was aware that public assistance committees, in computing need, were taking into consideration the additional 1s. per week for a child recently granted in unemployment benefit; whether it was intended that the additional 1s. should be so taken into consideration; and what guidance was being given to public assistance committees in the matter.—Sir KINGSLEY WOOD replied: The duty of a public assistance authority is to assess the needs of an applicant for relief which he cannot meet from his own resources, and in doing so they have no power to ignore unemployment benefit. There are, however, very few cases in which it is found necessary to supplement benefit by relief, and I do not think that it is necessary for me to give any special guidance in the matter.

Health Insurance and the Provision of Milk

Lieut.-Colonel MOORE asked the Minister of Health whether, with a view to improving the nation's health, he would consider the introduction of a scheme for enabling milk to be prescribed as well as medicine under the national health insurance scheme in cases where doctors were of the opinion that the health of the insured person in question would benefit thereby.—Sir KINGSLEY WOOD replied: The National Health Insurance Acts provide only for the supply of medicines and approved appliances, and there is no power to introduce the scheme suggested by my hon. friend. Extensive provision has been made in the schemes administered by local authorities acting as local education authorities and as maternity and child welfare authorities for the supply of milk free and at reduced rates to those to whom it is specially valuable and who are found to require this supplementation of their diets.

The Driving Test

Mr. MAGNAY asked the Minister of Transport the proportion of failures in the driving tests set by the examiners of the Ministry of Transport.—Mr. HORE-BELISHA replied: Up to and including Nov. 30th, 166,855 persons have been examined, of whom 24,803 failed to satisfy the examiner.

MONDAY, DEC. 9TH.

Supplies of Milk to Poor Children

Mr. THOMAS WILLIAMS asked the Minister of Agriculture whether his department and/or the Milk Marketing Board had considered a scheme for supplying cheap or free milk to school-children on non-school days and to children of poor parents between the age of 1 year and 5 years; and, if so, with what result.—Mr. ELLIOT replied: Under the existing arrangements the scheme for the supply of milk-in-schools in England and Wales at reduced rates may operate seven days a week and throughout the holidays, provided the children are assembled for the purpose. Careful consideration is being given to the possibility of introducing an experimental scheme for the supply of milk at reduced rates to children below school age in the special areas, but I am not in a position to make any statement on the subject.

Small Traders and Voluntary Insurance

Mr. TINKER asked the Minister of Health if he was aware that many persons in a small business of their own were

anxious to become contributors to the national health insurance scheme for the purpose of becoming entitled to a pension at the age of 65; and if he would examine this question to see if it could be made workable.—Sir KINGSLEY WOOD replied: The Government have indicated their intention of introducing a scheme of voluntary insurance for pensions purposes. The details of this scheme are now under consideration, but it is intended that the scheme shall be open to certain classes of persons, including the class referred to by the hon. Member, which are outside the scope of the compulsory scheme.

The New Milk Order

Mr. THOMAS WILLIAMS asked the Minister of Health whether he had received any complaints regarding the draft of the new Milk Order; and, if so, if he would state the source of the complaints and his reply.—Sir KINGSLEY WOOD replied: I have received representations from a large number of sources on various points arising on the draft order. I am at present considering these representations in consultation with my right hon. friend the Minister of Agriculture, and I hope shortly to issue a revised draft of the order.

National Parks

Mr. EDE asked the Minister of Health if he intended to introduce legislation this session to implement the recommendations of the departmental committee on national parks.—Sir KINGSLEY WOOD replied: I can hold out no hope of legislation this session. By the exercise of their powers, particularly under the Town and Country Planning Act, 1932, local authorities are making steady progress in the acquisition and reservation of land for public open spaces and in the control and premature building operations and will continue to receive all the help and encouragement in these matters which I am able to give them.

Accidents to Young Persons in Factories

Mr. LOVAT-FRASER asked the Home Secretary if he was aware that the figures of accidents to young persons in factories had gone up from 17,000 in 1934 to over 21,000 in 1935, largely owing to the lack of concentration brought about by long hours of work; and if he would take steps to deal with this evil.—Mr. GEOFFREY LLOYD (Under-Secretary to Home Office) replied: The accident figures quoted are those for 1933 and 1934. There was also a large increase in 1934 in accidents to adults, and both increases were, I am advised, due mainly to more extensive employment consequent on the greater industrial activity. I am aware that in some cases this has led to longer hours, but how far fatigue has contributed to accidents among young persons it is not possible to say. As stated by the Prime Minister in debate on the 3rd instant, it is the hope and purpose of the Government to introduce in their second session a Bill to revise and consolidate the Factory Acts.

TUESDAY, DEC. 10TH

Suicides in the Army

Mr. MAXTON asked the Secretary of State for War the number of officers and men in the Army who had committed suicide during the last twelve months, and whether any inquiry, other than coroners' inquests, had been made into the circumstances.—Mr. DUFF COOPER replied: The number of suicides in the Regular Army during the last twelve months, at home and abroad including India, has been: one officer and 36 men. Four of these were the subject of courts of inquiry.

National Health Insurance Cards

Mr. RHYS DAVIES asked the Minister of Health whether he was aware that officers of approved societies were complaining that blank health insurance cards for the first half of 1936 were issued later this time than usual; and if he could give any reason for the delay.—Sir KINGSLEY WOOD replied: The health insurance cards for the first half of 1936 were sent to approved societies at a rather later date than usual. On this occasion it was necessary to print not only 20 million cards, the form

of which had been entirely recast, but also the same number of leaflets explaining to insured persons the important changes made by the amending Act recently passed.

Overcrowding Surveys by Local Authorities

Mr. HERBERT WILLIAMS asked the Minister of Health what progress had been made in the surveys by local authorities under the provisions of the Housing Act, 1935, to determine the extent of overcrowding in their respective areas.—Sir KINGSLEY WOOD replied: I have fixed April 1st, 1936, as the date by which the survey should be completed, and I have every reason to believe that local authorities generally will complete the task in the allotted time. In most areas the survey has already started or will be commenced at an early date.

Free Insulin for Diabetics

Mr. GEORGE GRIFFITHS asked the Minister of Health if he was prepared to make arrangements for all diabetics who had run out of insurance benefit to be given insulin free without any means test.—Sir KINGSLEY WOOD replied: I have no power to make such arrangements, but as the hon. Member is aware, local authorities are empowered to provide insulin for persons in need of it who are unable to purchase it out of their own resources.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 30TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2963; diphtheria, 1413; enteric fever, 27; acute pneumonia (primary or influenzal), 848; puerperal fever, 38; puerperal pyrexia, 101; cerebro-spinal fever, 12; acute poliomyelitis, 13; acute polio-encephalitis, 1; encephalitis lethargica, 6; continued fever, 1 (Lewes); dysentery, 48; ophthalmia neonatorum, 60. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 6th was 3364, which included: Scarlet fever, 1189; diphtheria, 1283; measles, 119; whooping-cough, 276; puerperal fever, 21 mothers (plus 12 babies); encephalitis lethargica, 279; poliomyelitis, 6. At St. Margaret's Hospital there were 14 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 6 (2) from enteric fever, 25 (0) from measles, 7 (1) from scarlet fever, 10 (0) from whooping-cough, 27 (3) from diphtheria, 35 (4) from diarrhoea and enteritis under two years, and 58 (11) from influenza. The figures in parentheses are those for London itself.

The deaths from enteric fever outside London occurred at Bury, Stockport, Sunderland, and Leicester. Manchester reported 10 deaths from measles, Liverpool 4, Bootle 3, and Blackburn 2. The deaths from diphtheria were reported from 20 great towns, 3 from Manchester, 2 each from West Ham, Liverpool, and Newcastle-on-Tyne. The mortality from influenza is scattered over 32 great towns, Birmingham reporting 6, Manchester 4, Liverpool and St. Helens each 3.

The number of stillbirths notified during the week was 248 (corresponding to a rate of 41 per 1000 total births), including 38 in London.

BIGGER HOSPITAL AT EALING.—A scheme is on foot to add 78 beds to Ealing Hospital, making about 200 in all. The cost of the extensions is put at £100,000.

NEW MENTAL HOSPITAL FOR WEST KENT.—The committee of the Kent county council, appointed to consider the care of mental patients, has recommended that a new area be created for West Kent. A site of not less than 200 acres is to be purchased in the Dartford rural district for the erection of a mental hospital for 1200 patients. The capital cost of the institution, exclusive of land, is expected to be about £660,000.

VOLUNTARY EUTHANASIA

THE inaugural meeting of the Voluntary Euthanasia League Society was held on Dec. 10th at B.M.A. House, Tavistock-square.

Lord MORRIS, who presided, said that this was the first chance there had been of putting the aims of the society before a public meeting, of giving unanswerable reasons in favour of their view, of meeting arguments, and of overcoming the prejudices which existed in the minds of the lay public. Their object was to obtain legal recognition of the principle that, in cases of inevitably fatal disease in which agony reaches or oversteps the limit of human endurance, the sufferer should have the right to demand, and the doctor to give, relief. In spite of the greatly strengthened capacity of physicians and surgeons to relieve pain, there were still cases in which it could be said with certainty that the agony was intense and the fatal issue inevitable. The society had no intention to seek to include any other cases but these. They were not asking permission to end the lives of Mongolian idiots, of the subjects of senile dementia or other mental disease. They asked for authority only in the case of incurable disease in which the pain is intense. There were denominations within the Christian Church whose members had no right to such relief as that for which sanction was desired; these persons were asked to stand aside.

Dr. C. KILLICK MILLARD (hon. secretary of the society) read apologies for absence from Lord Ponsonby, Sir F. Menzies, F.R.C.P., Sir P. C. Varrier-Jones, F.R.C.P., Mr. McAdam Eccles, F.R.C.S., Prof. Julian Huxley, Sir Arnold Wilson, M.P., Miss Eleanor Rathbone, M.P., and others. Miss Rathbone had sent a letter promising her support in Parliament and saying that the movement appealed particularly to women, and letters of support were read from Sir John Robertson, late M.O.H. of Birmingham, the Rev. S. M. Berry, an American doctor, and a woman surgeon. Prof. Creed, professor of divinity in the University of Cambridge, wrote that if the proposed action was duly safeguarded it appeared to him to be a duty to God and to man to abbreviate such suffering when the sufferer himself desired it.

INDIVIDUAL AND SOCIAL ASPECTS

Mr. C. J. BOND, F.R.C.S., chairman of the executive committee, said that the introduction of the subject in its present form dated from Dr. Millard's address to the Society of Medical Officers of Health on Oct. 16th, 1931. He proposed to say a few words on the individual and the social aspect of the problem of euthanasia. On the individual aspect everyone, especially doctors, would welcome the change that has taken place in public opinion concerning suicide in recent years. Instead of regarding the person attempting suicide as a criminal, an effort was now made to deal with the troubles which had led to the tragedy—the alcoholism, the domestic unhappiness, the anxiety about work, or the mental instability—and if friends or relations were willing to accept the responsibility of looking after the sufferer, he was placed under their care.

This change of attitude had an important bearing on the present movement to place voluntary euthanasia on a sound, legal basis.

The social aspect of the problem was equally important. The free discussion which would undoubtedly follow the introduction of the proposed Bill into Parliament would have a profound educational effect on public opinion. Civilised man was to-day being called upon to exercise increasing

control over human development and human life, and this meant control at both ends, at entrance into, and exit from life. In order to exercise this control wisely, a truer conception was needed of the real value of life which consisted not merely in living, but in living usefully and happily. Where there was no hope of cure or restoration to health and usefulness the wish of the sufferer to be allowed to terminate a burdensome and unhappy existence should be respected. It was also well to remember that ours is an ageing population, and that thus the total amount of suffering and of useless lives grows larger, and requires wise handling and more efficient relief. A matter for consideration was whether the legalisation of voluntary euthanasia would tend to weaken the moral fibre of the nation, to lessen endurance and, by example, to lead to a more easy acceptance of defeat on the part of persons confronted with insurmountable difficulties in other departments of life. Mr. Bond did not think it would have any such effect. Even if voluntary euthanasia was legalised, it would still be possible for anyone who thought it his duty, and who wished to do so, to struggle on to the end. The decision to end a suffering life that has become a burden to others would in itself require courage and a high sense of duty.

The position and duty of the doctor in the matter of euthanasia was admittedly a difficult one. It was his duty to relieve suffering by every means in his power. But the sufferer might become habituated to the drug used to relieve pain. Very large doses were then required, and the balance between an analgesic and a lethal dose became a very delicate one. Moreover the repeated returns to consciousness, which it was difficult to avoid, might be a very depressing and sad experience. In fact the actual prolongation of life by the use of drugs might itself increase the total amount of suffering. If the proposed Bill became law, the doctor would be able to deal with the suffering more effectively; his position must be defined and legalised, and then what was now being done secretly, and often ineffectively, could be done openly on a legalised basis. Those who had been instrumental in bringing this subject of voluntary euthanasia before the public had been much encouraged by the widespread support with which their proposals had been received. Many of the objections which had been raised could be overcome, and those which rested on a misconception of the objects aimed at, would, they hoped, be removed by further discussion. Meanwhile, helpful criticism and useful suggestions would be welcomed. Mr. Bond said a word in conclusion about the letters and statements which had appeared in the press. An article which spoke of the proposed Bill as a "Bill to promote murder" and of a doctor who helps a sufferer to end his sufferings in a legalised way, as a "public executioner" was entirely beside the mark. The doctor should be compared rather with an anaesthetist who specialised in the art of preventing pain by inducing insensitivity to pain. A doctor who would assist his patient to end his sufferings by euthanasia would act as an anaesthetist, the difference being that the relief he gave was permanent and not merely temporary. Mr. Bond expressed the belief that the wish to help in the relief of human suffering would induce many to join this movement. They were concerned to-day only with voluntary euthanasia and the provisions in the proposed Bill, but as public opinion developed, and it became possible to form a truer estimate of the value of human life, further progress along preventive lines will be possible. It would then be apparent to what extent help could

be given to cases which from the very beginning were hopeless.

Dr. C. KILICK MILLARD (hon. secretary of the Society) said that much of the pain and suffering in the world was due to certain diseases, which not only killed their victims, but killed them by the slow, lingering process of exhaustion due to pain and suffering—a process often long drawn out over a period of many weeks or even months. All through the world's history there had been those who have wondered whether all this pain and suffering in the process of dying from incurable disease was really necessary; whether it was really God's will; or whether it might not be right, under certain circumstances, to substitute for the lingering and painful death a quick and painless one. Many people to-day thought that the law which prohibited such a course needed emendation. As the law now stood, anyone, no matter how great his sufferings or how certain his doom, who took upon himself to terminate his life or even deliberately to shorten it by a single day was guilty of suicide (a felony); whilst anyone who aided and abetted him, no matter how merciful and disinterested his motives, was guilty of murder. The Society thought that the present law, in this respect, was harsh and unmerciful, and out of harmony with the humanitarian spirit of the age.

SUGGESTED CHANGES IN THE LAW

The Voluntary Euthanasia Legalisation Society has been formed for the express purpose of bringing about a change in the law, so that it might be legally possible for a person who had attained the age of 21 years and was suffering from incurable, fatal, and painful disease, to be granted euthanasia—i.e., easy death—if he so desires, without committing any offence or incurring any stigma. The Society, acting under expert legal advice, had accordingly prepared a Bill, the Voluntary Euthanasia (Legalisation) Bill, to give effect to this reform, and it is one principal object of the Society to get this Bill passed into law.

The procedure provided for in the Bill was briefly as follows:—

The sufferer must sign an official application form (not merely scribble his request on a half sheet of paper), and his signature must be duly attested by two witnesses, one of whom (referred to as the official witness) must be of a certain specified status—e.g., lawyer, doctor, minister of religion, &c. This is to safeguard against any undue pressure by interested relatives at the time of signing.

In addition, the patient must obtain two independent medical certificates, also on official forms, to the effect that in the opinion of the doctor signing the certificate, the patient is suffering from disease of an incurable, fatal, and painful character.

The application and the two medical certificates must then be sent to an official appointed for the purpose, to be known as the euthanasia referee. It will be his duty to satisfy himself, by a personal visit and otherwise, that the application and certificates are all in order, and that the case is a proper one to be granted euthanasia.

If the euthanasia referee is satisfied, he will grant the necessary permit, but the Bill provides that an interval of seven days must elapse before the permit may be acted upon. There is obviously a necessity to interpose some delay.

It has been thought well in the Bill to give to friends, acting through the "nearest relative" as defined in the Bill, a right of appeal to a court of summary jurisdiction, on the ground that all the necessary conditions have not been complied with. The mere fact that the friends object on principle to euthanasia is not sufficient. Probably, in practice, the right of appeal would seldom be exercised.

The medical practitioner who is to administer euthanasia would be named on the permit, and he must be one who holds a licence for this purpose from the Minister of Health:

The Bill had been criticised on the ground that the procedure outlined above was too elaborate and cumbersome, and that it would unduly deter sufferers from applying for the relief. Another objection was that the seven days' delay was too long. If it was thought desirable to simplify the procedure and shorten the time, no objection would be made by the promoters. But the procedure being an irrevocable step must be very carefully guarded against over-hasty action or the possibility of abuse.

OBJECTIONS TO BE MET

The objections to the proposals might be classed under three heads: (1) moral, (2) legal, (3) practical. As regards (1) this was at once the greatest and the least of the difficulties. The strength of the sincere opposition on moral grounds was not minimised. But it must be remembered that only *voluntary* euthanasia was asked for. If the individual sufferer concerned had himself no religious scruples about receiving euthanasia, he ought not to be prevented merely because someone else might have scruples.

As to (2), the legal objections, little serious criticism had been received from the legal profession, but it was recognised that what was suggested was a radical departure from traditional and existing law, and it was to be expected that the representatives of the law should demand adequate and ample safeguards against possible abuse before approving of the proposed reform. The promoters submitted, however, that the present position in which doctors were sometimes impelled, from motives of mercy, to give an overdose of sleeping draught to a patient suffering intolerable pain, and do so, to a large extent, with the approval of public opinion, was very much more open to abuse than anything proposed under the Bill.

As to (3), practical objections, these had all been carefully considered and could, he believed, be met. (a) It was said that even though euthanasia were legalised there would be no demand for it. This was disputed. Not all people cling to life; the demand might be small at first, as with cremation, but it would increase under the force of example. (b) The uncertainty of diagnosis and prognosis was emphasised. Doctors were not infallible, and patients given up as hopeless had sometimes recovered. A certain element of risk in this respect must be admitted, but the patient must take this risk just as he has to do in deciding whether to undergo some major operation. The argument would have more weight in the case of compulsory euthanasia, but human fallibility was not considered a sufficient argument against the compulsory taking of life in the infliction of capital punishment. (c) It was urged that there would be great difficulties in carrying out the proposed scheme, and that it would be unworkable in practice. The promoters contended that the difficulties were certainly not insuperable. (d) The question of possible abuse had already been referred to under legal objections. When the battle for cremation was being fought it was urged that the burning of the body would enable the poisoner to effectually destroy the evidence of his crime; practice had shown that this objection was far less serious than a priori it was thought to be. (e) Lastly, it was said that there would be certain concomitant disadvantages if euthanasia were legalised—e.g., mental distress to the patient through having to decide whether or not to apply for euthanasia. Conscientious persons, although not wishing to die, might feel that it was their duty to relieve their friends of the burden of looking after them in their

last illness. It was submitted that this disadvantage was small in comparison with the great advantages the Bill would confer. Moreover, one effect of legalising euthanasia would be that it would tend to make patients who did not want to apply for it more inclined to bear their pain patiently, which would be all to the good. There is also the possibility of dissensions being caused amongst relatives on the question whether or not to oppose or accede to a sufferer's desire to apply for euthanasia. This was hardly a very serious objection; relatives were apt to quarrel over many things. Against all these objections, and any others which might be brought forward, must be set the great advantage to be gained by the relief of suffering.

The Voluntary Euthanasia Legalisation Society would welcome criticism, especially constructive criticism regarding the provisions of the Bill, the exact details of which were not to be regarded as necessarily final. They asked only that their opponents should be fair and should not misrepresent them as asking for something which in fact they were not asking for.

SUPPORT FROM VARIOUS QUARTERS

The Earl of LISTOWEL said that as a member of the House of Lords he knew the difficulty of altering even the most antiquated law. If they were to be successful in amending the legal code by introducing a piece of progressive legislation they must get support from every quarter of public opinion. "As the first layman to speak from this platform" he desired to express gratitude to those members of the medical profession who had taken the initiative in this campaign and had not feared to seek the burden of additional grave responsibility. The layman owed the profession a debt for the encroachment which it had made on human suffering and that debt would be increased so long as the profession continued to produce men such as those present on the platform. To the ordinary man there could be no more distressing or tragic experience than to watch one he loved sinking toward the grave, and that distress was increased a thousand fold when the friend or the relation had to pass the last moments in a state of the utmost agony. There was a sphere within which pain could be diminished by morphia and the like. By the introduction of voluntary euthanasia they would carry on further the great battle against suffering which the men of science had waged. For all Christians the greatest of all commandments was the exercise of mercy. The quality of mercy should be extended to the dying.

The Rev. HAROLD ANSON, Master of the Temple, said he did not represent the Church of England, but a certain body of opinion within that church including among others Dr. Inge, Canon Sheppard, and two professors of divinity. He believed there was no religious or moral objection to the course proposed. The views of the Church were subject to change. Truth was progressive. It used to be believed that every birth was endowed by God. That opinion had changed, and so too opinion as to the providential character of death must be changed. Judgment must be used as to whether the pain of disease answers any good ethical purpose. If not, it was a duty to do away with pain, when it could be lawfully done away with, and this must apply to the end of life. However, medical men must be satisfied, and legal men must be assured that the procedure could be carried out without danger to relatives. If those two points of view were satisfied there was

nothing in the teaching and philosophy of religion to prevent the exercise of human reason in this matter.

The Rev. F. W. NORWOOD, D.D., said the principal concern of religion was more with the entrance and conduct of life than with its exit. He was troubled not so much as to whether people should be allowed to leave life when its misery was unendurable, but rather why they should have to meet such misery in life. A society which rained death on all ages of both sexes was unduly squeamish if it disallowed those suffering intolerable agony to leave life if they wished. Religion which refused to believe in an indifferent or a punitive God, which called on people to make themselves superior to flesh, to believe that Christ has brought immortality to life, and regards death as going out to meet the Heavenly Father, could not enforce the necessity of escaping from life in a loathsome penthouse of pain, seeking not for God but for extinction. Religion which allowed capital punishment but did not allow it as a spectacle, should not allow the hopeless watching of the death agonies of the loved ones. Religion which regarded medical science as a gift of God should not condemn that science, when it could not cure pain, to prolong it. Why had religion tolerated so long an attitude abhorrent to its deepest instincts and its teaching? The medical profession at least had an opiate to offer; the others had nought save counsel and advice. Few ministers could not tell stories to wring the hearts of all sane persons. He himself had long felt the present condition to be an anomaly and hoped that this movement would end it.

Mr. ROBERT HARDING described how a harrowing and prolonged personal experience had made him rush to welcome this movement, which might save others from the miseries which he had to endure.

A number of written questions were sent up to the platform and were answered by the speakers there.

AN OBJECTION

Dr. C. O. HAWTHORNE then rose to explain why he was against the proposal and pointed out that though the meeting was in the house of the B.M.A. that body had nothing to do with the movement. He regarded the state of affairs in which the proposal was to be justified as an exceptional and rare condition. The remedy proposed was an enormous change, for the sake of an infinitesimal amount of good. Deliberate extinction of life was a principle likely to have extension and repercussion. A patient suffering severe prolonged pain was in no state of mind to exercise calm and collected judgment or to appreciate the issues involved in his decision. The friends and relations might be equally ill-balanced through grief and worry. There was something repulsive in the idea of sons and daughters sitting round a table and discussing whether their parent should be encouraged or deterred from a method of suicide. The final sentence according to the proposal would be passed by a magistrate, who might make a mistake, and the executive officer was to be the doctor, also not infallible. Moreover, many doctors would decline. It was not necessary to have any technical equipment to poison a patient; the right person to perform that office would be a relation or intimate friend.

The resolution, "that in the interests of humanity, it is desirable that voluntary euthanasia should be legalised, subject to adequate safeguards, for persons who are suffering from incurable, fatal, and painful disease," was put to the vote and carried by a show of hands.

MEDICAL NEWS

University of London

A special advisory board has been constituted to deal with questions relating to the academic post-graduate diploma in dietetics, and regulations for the award of the diploma will be issued later.

The following examiners have been appointed for 1936 :

Second Examination for M.B., B.S.—Anatomy: Dr. John Kirk, Prof. H. H. Woollard, Prof. A. B. Appleton, Prof. T. B. Johnston, Prof. William Wright, Dr. Thomas Yeates, and Prof. J. E. S. Frazer. *Pharmacology:* Prof. J. H. Gaddum, Dr. O. Inchley, Dr. Philip Hamill, Dr. V. J. Woolley, Dr. Nathan Mutch, Prof. Samson Wright, Dr. Eleanor Scarborough, and Prof. A. St. G. J. M. Huggett. *Physiology:* Prof. J. C. Drummond, Prof. J. P. Hill, F.R.S., Dr. W. H. Newton, Prof. R. J. S. McDowall, Dr. G. W. Nicholson, Mr. W. R. Spurrell, Prof. D. T. Harris, Prof. E. C. Dodds, Mr. J. H. Woodger, D.Sc., Prof. Samson Wright, Prof. Winifred Cullis, and Prof. Huggett.

Second and Third Examinations for B.D.S.—Anatomy: Prof. Wright and Prof. Woollard. *Physiology:* Prof. Harris and Mr. Spurrell. *Prosthetic dentistry:* Mr. J. B. Milne and Dr. E. W. Fish. *Special anatomy, special physiology and dental histology:* Mr. T. W. Widdowson (one internal examiner to be appointed). *Medicine:* Dr. C. E. Newman and Dr. K. E. Harris. *Surgery:* Mr. E. C. Hughes and Mr. Alan Perry. *Pharmacology:* Mr. Frank Coleman and Dr. W. A. M. Smart. *Pathology and bacteriology:* Prof. C. C. Okell and Mr. Arthur Bulleid. *Dental surgery and operative dental surgery:* Mr. E. C. Sprawson and Prof. E. B. Dowsett. *Orthodontics:* Mr. Harold Chapman and Mr. S. F. St. J. Steadman.

Diploma in Clinical Pathology.—Prof. E. C. Dodds, Prof. James McIntosh, and Prof. J. Shaw Dunn.

Diploma in Public Health.—Part I.: Prof. M. E. Delafield, Prof. W. W. C. Topley, F.R.S., Prof. Okell, and Prof. H. B. Maitland. Part II.: Prof. M. Greenwood, F.R.S., Prof. W. V. Jameson, Prof. R. M. F. Picken, and Dr. Alexander Joe. *Hospital administration:* Dr. Joe.

Dr. J. C. Thomas has been appointed Graham scholar in pathology for two years in succession to Dr. E. S. Duthie, who has been appointed assistant pathologist to the Royal Hospital, Sheffield.

University of Bristol

Dr. N. J. England has been successful in obtaining the degree of M.D.

National University of Ireland

The degree of M.D. has been awarded to Dr. M. Harris O'Connor.

University of Dublin

At recent examinations at the School of Physic, Trinity College, the following candidates were successful:—

FINAL MEDICAL EXAMINATION FOR THE M.B., B.CH., B.A.O. (PART II.)

Medicine.—Bethel Lapedus, S. J. H. Douglas, Benjamin Rogol, G. S. Caithness, H. B. Sutton, R. C. O'Grady, W. S. M'Bride, E. S. Dorman, G. H. B. Roberts, D. P. Harris, D. H. T. Duggan, and L. W. McCaughey (old regulations).

Surgery.—S. J. H. Douglas, D. H. T. Duggan, B. E. T. Aldwell, J. C. Gaffney, A. F. H. Keatinge, Emanuel Cowan, H. C. Bourke, B. M. O'Sullivan, H. B. Sutton, G. W. M. Elliott, S. B. Sachs, D. P. Harris, J. A. Hamilton, J. T. Wellwood, E. S. Dorman, J. R. Shapiro, Philip Citron, R. C. O'Grady, and P. St. G. Robinson.

Midwifery.—H. S. Boyce, W. A. Gillespie, G. W. Patterson, Mandel Friedman, W. D. Chesney, and Max Levy.

DIPLOMA IN GYNÆCOLOGY AND OBSTETRICS

B. E. Wurm.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty held on Dec. 2nd, with Prof. Archibald Young, the president, in the chair, the following were admitted to the fellowship: John Charles Alexander, M.B., William Herbert Brown, M.D., and James Gibson Graham, M.D. (Glasgow); Andrew Fergus Hewat, M.D. (Edinburgh); and Isaac Chesar Michaelson, L.R.C.P. Edin. (Glasgow).

The president intimated that the faculty had received a legacy of £600 from the estate of the late Dr. Freeland Fergus, who was its president during the years 1919–22.

Air Hygiene Foundation of America

This foundation has been formed, with headquarters at Thackeray-avenue and O'Hara-street, Pittsburgh, Pa., to investigate air contamination and disseminate information. Research has begun at the Mellon Institute of Industrial Research, Pittsburgh, under the direction of Mr. H. B. Meller, with Prof. Samuel R. Haythorn as medical adviser.

THE King has given permission to Dr. G.W. Spencer to wear the insignia of the fourth class (civil division) of the order of Al Rafidain which has been conferred on him by the King of Iraq for his services as chief ophthalmic specialist in the Iraq health service.

THE death occurred at Canford Cliffs, Bournemouth, on Dec. 6th, of Mr. Henry Walter Pigeon, M.B. Camb., F.R.C.S. Eng., consulting surgeon to the Hull Royal Infirmary.

Bernhard Baron Trust

Under the terms of this trust grants to hospitals and charities are made every year on Dec. 5th, the birthday of the late Mr. Bernhard Baron. This year £41,317 is being distributed and the grants include £16,200 to London hospitals and £9640 to hospitals outside London. Since the fund was created in 1928 over £300,000 has been distributed.

Certifying Factory Surgeons

The annual dinner of the Association of Certifying Factory Surgeons was held at the Langham Hotel, London, on Dec. 5th, Dr. A. Glen Park (Bolton) presiding. In proposing the toast of the Factory Department of the Home Office Dr. W. H. F. Oxley (London) recalled the earliest festive meal in 1901 of which Dr. V. A. Jaynes and Dr. J. A. P. Barnes were, he thought, the only other survivors present. He criticised the use of the word "young person" in the Factory Act, preferring the word "children"—which was indeed used by subsequent speakers—and credited the department with having been the means of stopping the terrible exploitation of child labour; but the number of factory inspectors was still too small, and eternal vigilance was still needed. The standard set by Whitelegge and Legge was not an easy one to live up to. A welcome change in the work of certifying surgeons was due to the fact that children could now, and mostly did, pick and choose their own jobs. The few shillings brought in weekly by these children was a real asset in the family budget, providing as it did the additional vitamins A and D so needful for vigour. The Association's work was preventive medicine applied to the individual, and as such it should, he thought, remain the general practitioner's job.

Mr. D. R. Wilson, H.M. chief inspector of factories, who replied, said he was a great believer in tradition, and the certifying factory surgeon dated from 1844. His was one of the oldest of official medical appointments. It was a heterogeneous system that worked well in practice. Central appointment of certifying surgeons left the selection free from bias, local or political; appointment of local practitioners gave the desirable link in continuity, for the certifying surgeon remained in the same place and was familiar with the local industries, their risks, and the indications of exposure to these risks; moreover, he came into contact with the local employers of labour. The charge of perfunctory work was simply not true; many of the surgeons spent much time on their reports. His own feeling was that the present fees were inadequate, that there should be more contact between the school and the factory (one obvious way would be by continuity of records), and that the effect of occupation on the youngster should be ascertained by re-examination after (say) six or twelve months. Dr. S. A. Henry, a senior medical inspector of factories, who also replied, regretted the absence of the eleven women factory surgeons but was glad to see there three full-time works doctors. He thanked factory surgeons for help rendered outside their statutory duties. Appointed as he was by a State Department, the factory surgeon was endowed with impartiality as between employer and employed, an inheritance to be guarded.

Sir Francis Fremantle, proposing The Association, said that the medical officers of health, to whom he belonged, originated in 1847, three years after the certifying factory surgeons, and the two had grown up side by side out of general practice. He was sorry that the Association only included some 280 of the 1700 to 1800 factory surgeons;

if all were members they could speak with more unity and authority. He agreed that the break between school and industrial life must be bridged. Dr. Park, responding, opened with a tribute to Thomas Percival (1740-1804) and the Manchester Board of Health. From a small beginning the medical section of the factory department had now grown to eight full-time officers. Certain enlightened firms were already examining industrial recruits up to 18-20 years; he would like to see systematic investigation of adults absent from industry through illness, and this need not clash with the work of the family doctor. The toast of The Visitors was proposed by Dr. O. Field, and the Rt. Hon. J. R. Clynes, M.P., in reply, recalled the time when "as a little black-haired nipper of ten" he had to pass the works doctor. He would like to see medicine brought ever more closely in touch with industry, particularly in the direction of informing the worker better about the risks and dangers of his work. Sir Henry Fildes, M.P., also replied. Finally, on the proposal of Mr. C. Entwistle, M.P., the President was toasted with acclamation.

Royal Surgical Aid Society

The Lord Mayor of London, Sir Percy Vincent, who presided at the seventy-third annual meeting held at the Mansion House on Dec. 9th, congratulated the society on its splendid work and said that the legacies received during the year amounted to £12,733, a record sum. Special effort was, he said, being made for one of the depressed areas, Durham; with £1450 already collected 300 dentures had been supplied, and he appealed for more. Prof. G. Grey Turner, who proposed the vote of thanks to the surgeons and the staff, said it was a great comfort to the operating surgeon to feel that, having done what he could in the way of surgery, the patient was to be looked after and his requirements met by a philanthropic body such as this. He mentioned the late Mr. Muirhead Little, who was associated with the work of the society for 40 years. Mr. E. Laming Evans, replying for the staff, spoke with satisfaction of the establishment of an ophthalmic department which would supply properly prescribed and tested glasses to those needing them.

Society of Apothecaries of London

Sir William Willcox presided, as master, over a yeomanry dinner held last Tuesday at the Apothecaries' Hall in Water-lane. Sir Humphry Rolleston, an honorary freeman, proposing the toast of the Society, described it as a happy combination of ancient tradition and modern activity. Its prestige had been increased by the distinction of its recent masters and Sir William added to that distinction. He fitted into the surgeon's definition of a surgeon, for he was "a physician and something more"—a toxicologist, an adviser of judges, and a sportsman with horse and gun. Sir Humphry rejoiced that the master had come back from the end of the world with every one of his fellow-travellers of the British Medical Association safe and sound. Replying, Sir William said that while some people climbed the ladder of fame, Sir Humphry Rolleston had been raised there by the affection and esteem of the whole of the medical profession. In his own travels in Australia what had impressed him most had been the all-round efficiency of the men who had to practise medicine under difficult conditions and their interest in what was written and thought in this country. Turning to the Society's affairs he spoke of his regret that owing to illness Sir George Buchanan had not been able to play his full part as master during the year; his duties had been fulfilled by Dr. Wakelin Barratt, past master. As the most active of the few really active city companies in London, the Society retained its close connexion with its guild, the medical profession, and he would advise all young medical men to join it. The Society also helped those seeking qualification: for while its examinations maintained a standard as high as those of the universities and joint colleges they were held more frequently and lower fees were charged. Dr. A. P. Gibbons, senior warden, proposed The Guests, naming among them Sir George Chrystal, secretary to the Ministry of Health, Sir Henry Gauvain, Lieut.-General Sir James Hartigan, Air-Commodore A. W. Iredell, Sir Henry Dale, Dr. G. C. Anderson, and the deans of the faculties of medicine of Oxford, Cambridge, Cardiff, and Leeds, of

the medical schools of Charing Cross, King's, St. Mary's, St. Thomas's, Westminster, and of the London School of Hygiene. Sir Arthur Robinson, chairman of the Supply Board, responding, spoke of his long and happy associations with the Society when he was secretary to the Ministry of Health. Mr. S. P. Vivian, the Registrar-General, also responding, produced some useful hints, derived from Anglo-Saxon medical works, about the burial of badgers at the gates of boroughs, which he thought might be made the subject of a memorandum to borough councils from the Ministry. After quoting a French statesman who at an official dinner referred to the menu as "the list of the causes of death" he ended with a felicitous quotation from Thackeray about the well-being of those who attend the feasts of doctors. In Thackeray's words, "Ask us again, dear Sirs."

First-aid Course in Chemical Warfare

The British Red Cross Society has arranged a course of eight lectures on first aid in chemical warfare for doctors and trained nurses. The lectures, which will be held on Mondays and Wednesdays at 8 P.M., will begin on Jan. 27th. Applications should be sent to the matron-in-chief of the society at 14, Grosvenor-crescent, London, S.W. 1, before Jan. 8th.

Insurance against Broken Spectacles

The fear of breakage is said to be a serious deterrent against the purchase of spectacles and other optical goods such as cameras, field-glasses, telescopes, and microscopes. Moreover, the expense of repairs leads to delay in bringing them back to the maker after they have been broken. To meet this trade problem a policy of insurance has now been devised by the Eagle, Star, and British Dominions Insurance Co., Ltd., Threadneedle-street, London. While the company is prepared to issue individual policies to wearers of glasses of any type or to users of other optical instruments, it is expected that group policies issued through optical dealers will be more generally useful. Under this scheme the optician will be able to issue an insurance policy with every pair of glasses he sells, thus ensuring that if breakage or loss takes place the customer will return to him for the necessary repair or replacement—and return promptly. The premium for spectacles on policies issued to individuals will be 5s. on the first pair, 4s. on the second pair, and 3s. 6d. on each subsequent pair. Where group policies are issued to opticians, however, special rates will be quoted.

The New Ilford Radiographic Department

Sir Ivor Philipps, chairman of Ilford Ltd., opened a new radiographic department on Dec. 2nd. The department, which is on the first floor of Tavistock House North, contains well-equipped X ray and dark rooms, a studio for clinical photography, lecture and exhibition rooms, all under the charge of Miss K. C. Clark, with the assistance of Messrs. A. E. Dean and Co. in keeping the X ray apparatus up to date. Capt. T. Midgley Illingworth, director of Ilford Ltd., who welcomed the visitors, said the department had been set up with the idea of being of service to radiography, and it would be conducted on professional lines. Sir Ivor said he hoped the department would serve as a convenient meeting place for those interested in radiography, and a place where the technique of X ray photography could be developed and discussed. The expert staff would render assistance in overcoming any difficulties and problems arising in practice. Clinical photography was also being provided for. Dr. Duncan White said that, although at the present time throughout the country there were many places offering excellent tuition in the value of radiography, there was hardly any centre where practical instruction was given. This was of supreme importance both to the radiologist and the radiographer. He had himself given up much time to coaching would-be radiologists how to use the X ray apparatus at a certain hospital without interfering with the routine work of the department. He visualised the Ilford Radiographic Department serving as a centre where radiologists or radiographers in the early days of their search after knowledge might come for a period to be instructed, to beware of the pitfalls, and to learn something of the fascination of the art of radiography.

Nuffield House, Guy's Hospital

Since 1884 private paying patients have been admitted to cubicles in Bright's ward in Guy's Hospital. Now, thanks to the generosity of Lord Nuffield, the accommodation available for such patients has been increased by the erection of a four-storied block containing 70 beds (50 in private rooms and 20 in cubicles), two operating theatres, and an X ray room. The cubicles at 5 guineas a week are reserved for patients with an income under £350 (single person), £450 (married), and £550 (married with children under 21); the private rooms (7 to 12 guineas) are available without restriction to patients of any income under the care of any "person of consultant rank," subject to the approval of the medical superintendent of the hospital. The fees in all cases include maintenance, nursing, and drugs. The Prince of Wales opened Nuffield House, which is situated at the southern end of the open space known to Guy's men as "The Park," on Dec. 10th, and said that King Edward's Hospital Fund for London regarded the provision of pay-beds as a very valuable addition to the voluntary hospital service of the city. He also announced that Lord Nuffield has succeeded Mr. F. P. Whitbread as treasurer to Guy's Hospital.

Grove Hospital, Tooting

Last Friday, Dec. 6th, Mr. W. R. Owen, on behalf of the Medical Services Committee of the L.C.C., opened at Grove Hospital, Tooting, the new block which has been built as part of the general scheme for the extension of isolation accommodation in London. It is two storeys in height and provides accommodation for 60 patients in single-bedded wards separated by partly glazed screens, with duty rooms so placed that the nurses will be able to keep every patient under observation. Each ward is 11 by 10 feet and 9 feet high, giving a cubic space of 990 feet. Among those present at the ceremony, in addition to members and officers of the London County Council and members of the Grove Hospital committee, were Alderman A. J. Hurley, representing the Mayor of Wandsworth, representatives of the Ministry of Health, the town clerk, and the medical officer of health for Wandsworth and medical officers of other metropolitan boroughs.

Fellowship of Medicine and Post-Graduate Medical Association

The special courses during the early part of 1936 will include the following: dermatology at the St. John's Hospital (Jan. 2nd to 30th); cardiology at the National Hospital for Diseases of the Heart (Jan. 13th to 24th); urology at St. Peter's Hospital (Jan. 20th to Feb. 1st); proctology at St. Mark's Hospital (Feb. 3rd to 8th); neurology at the West End Hospital for Nervous Diseases (Feb. 3rd to 8th); gynaecology at the Chelsea Hospital for Women (Feb. 10th to 22nd). Week-end courses will be given on heart and lung diseases at the Royal Chest Hospital (Jan. 18th and 19th); and in physical medicine at the St. John Clinic and Institute of Physical Medicine (Feb. 8th and 9th). A course of surgical tutorial lectures, which are intended for F.R.C.S. (Final) candidates, will be held on Tuesday and Thursdays at 8.30 p.m. at the National Temperance Hospital from Jan. 14th to March 5th. The full list of special courses for the year will be ready shortly and may be obtained on application to the secretary of the Fellowship, 1, Wimpole-street, London, W.1.

Appointments

DRAINER S. K., M.B. Glasg., D.P.H., has been appointed Assistant Medical Officer for the County of Aberdeen.
DUCKWORTH, GEOFFREY, M.R.C.P. Lond., Hon. Physician in Charge of the Skin Department at the East Ham Memorial Hospital.
HANCOCK, P. E. T., B.Chir. Camb., M.R.C.P. Lond., Medical Registrar at the Cancer Hospital (Free), London.
PENMAN, G. G., M.D. Camb., F.R.C.S. Eng., Ophthalmic Surgeon in charge of out-patients, St. Thomas's Hospital. (Corrected notice.)
SHELLEY, URSULA, M.D., M.R.C.P. Lond., Hon. Assistant Physician to the Princess Louise Kensington Hospital for Children.
SMALL, H. A. D., M.B. N.Z., Resident Medical Officer at the Cancer Hospital (Free), London.

STURROCK, G. M., M.B. Edin., F.R.C.S. Edin., Assistant Visiting Surgeon to the Dundee Royal Infirmary.

Queen Charlotte's Maternity Hospital.—The following appointments are announced:—

PURDIE, A. W., M.B. Glasg., Senior Resident Medical Officer;
HARBUTT, S. W. J., M.B. N.Z., Assistant Resident Medical Officer; and

OLDFIELD, JOSIE M., M.R.C.S. Eng., Resident Anaesthetist and District Resident Medical Officer.

Medical Officer's Department, Birkenhead.—The following appointments are announced:—

BLACKSTOCK, ERIC, M.D. Belf., D.P.H., Additional Assistant Medical Officer;

HERP, S. B., M.D. Liverp., M.C.O.G., Consulting Gynaecologist and Obstetrician; and

CHARTERS, D. L., M.B. Glasg., Consulting Ophthalmologist.

Certifying Surgeon under the Factory and Workshop Acts:
Dr. W. D. MACKINNON (Portree (Isle of Skye) District, Inverness).

Births, Marriages, and Deaths

BIRTHS

FITZGERALD.—On Dec. 2nd, at Lucknow, the wife of Major G. H. FitzGerald, I.M.S., Bareilly, of a daughter.

GANNER.—On Dec. 6th, at Birmingham, to the wife of Philip J. Ganner, F.R.C.S. Eng., a son.

GRIFFITHS.—On Nov. 30th, at Bentinck-street, W., the wife of J. Ivor Griffiths, F.R.C.S. Eng., of a son.

HENDLEY.—On Dec. 3rd, at Wrotham, Kent, the wife of Dr. H. J. H. Hendley, of Brasted, of a son.

MCCAY.—On Nov. 29th, at Calcutta, the wife of Frank McCay, M.D. Camb., of a daughter.

MCLAUGHLIN.—On Dec. 8th, at Sheffield, the wife of Dr. A. I. G. McLaughlin, of a son.

PULVERTAFT.—On Dec. 10th, at Ebnal Dyke, Gobowen, Salop, to Betty (née Willock), wife of Guy Pulvertaft, F.R.C.S.—a son.

WIGHT.—On Nov. 24th, at Wangford, near Beccles, the wife of Cecil H. Wight, M.C., M.R.C.S. Eng., of a daughter.

MARRIAGES

PEARSON—KEATING.—On Dec. 7th, Hubert Edward Spencer Pearson, M.R.C.P. Lond., to Ruth Monica Keating.

PETERKIN—ELDER.—On Nov. 30th, at St. Andrew's Church, Edinburgh, George Alexander Grant Peterkin, M.B. M.R.C.P. Edin., to Alison Anne Macainsh, daughter of the Rev. Hugh and Mrs. Elder, Moffat.

STEPHEN—ROYCE.—On Dec. 3rd, at St. John's Church, Westminster, Robert Alexander Stephen, M.D., Captain, R.A.M.C., to Audrey Vivien, youngest daughter of Mr. George Wm. Royce, Cambridge.

THORNTON—BECHER.—On Nov. 23rd, at Baghdad, Thomas Thornton, M.D. St. And., F.R.C.S. Eng., of Dundee, to Joan Becher, of Bexhill.

TOWNSEND—LAW.—On Nov. 30th, R. L. H. Townsend, B.M. Oxon., of Bulawayo, to Brenda, eldest daughter of Mr. C. A. Law, of London.

DEATHS

BABINGTON.—On Dec. 5th, suddenly, Stanley Noel Babington, M.R.C.S. Eng., of Leicester, aged 64.

EARDLEY-WILMOT.—On Dec. 3rd, at Petworth, Sussex, Robert Eardley-Wilmot, M.B. Lond., J.P., aged 86.

EVANS.—On Dec. 7th, at Brynkynallt, Bangor, N. Wales, Griffith Evans, M.D. McGill, D.Sc. Wales, late Inspecting Veterinary Surgeon, Army Department, in his 101st year.

HICKLEY.—On Nov. 26th, at Bromley, Kent, Arthur Mackenzie Hickley, M.R.C.S. Eng.

LONDON.—On Nov. 25th, at Lee Green, S.E., Ernest E. B. London, M.R.C.S. Eng.

MACLAGAN-WEDDERBURN.—On Dec. 7th, at North Berwick, Laurence Craigie MacLagan-Wedderburn, M.D. Edin.

MILLS-ROBERTS.—On Nov. 27th, at Bournemouth, Lieut. Colonel Robert Herbert Mills-Roberts, C.M.G., J.P., F.R.C.S. Edin., of Plas Meini, Festiniog, Merionethshire.

MOORE-GRAHAM.—On Nov. 26th, in London, George Robert Moore-Graham, L., L.M., K.Q.C.P. Irel., of Melbourne, Australia.

PERRIN.—On Dec. 8th, after a short illness, at Upper Wimpole-street, W., Walter Sydney Perrin, M.Chir. Camb., F.R.C.S. Eng.

PIGEON.—On Dec. 6th, at Bournemouth, Henry Walter Pigeon, M.B., M.C. Camb., F.R.C.S. Eng., formerly of Hull, aged 76.

ROBERTS.—On Nov. 30th, at a London nursing home, Edward Roberts, M.R.C.S. Eng., of Aberlholwyn, Llanfarian, Cardiganshire.

RUSHWORTH.—On Nov. 28th, at Walton-on-Thames, Norman Rushworth, M.R.C.S. Eng.

SHAW.—On Dec. 2nd, at Haditha, Iraq, Frederick Roland Studdert Shaw, M.C., M.B. Dubl., late Major, R.A.M.C., Chief Medical Officer, Iraq Petroleum Co.

SMITH.—On Dec. 7th, at Hove, Thomas Morland Smith, M.R.C.S. Eng., late of Bournemouth.

WARD.—On Dec. 7th, at The Sanatorium, Pietermaritzburg, Charles Ward, F.R.C.S.I., in his 85th year.

YOUNG.—On Dec. 6th, at Yarmouth, Isle of Wight, Samuel Leggett Orford Young, M.D. Camb., late of Freshwater, I.W., aged 58.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THORACOPLASTY IN SCANDINAVIA

ALL over the world an endeavour is being made to discover the surest and safest means of securing effective closure of cavities in the lung. One of the most interesting publications of recent years on this subject is by Johan Holst, Carl Semb, and J. Frimann-Dahl (*Acta chir. Scand.*, 1935, lxxvi., Suppl. 135). This paper is an extremely frank exposition of the results of various modifications of thoracoplasty tried by the authors. A recent modification which has given them their most successful results is the addition of Semb's technique for apicolysis in conjunction with thoracoplasty. Even the most extensive rib resection, with total extirpation of the first and second ribs, does not always (it is stated) achieve reliable collapse of cavities of the upper lobe. When, however, the extrafascial apicolysis of Semb is combined with this extensive thoracoplasty it is possible to obtain "effective selective collapse of the cavity and low mortality."

Semb describes his technique in another part of the same volume (*ibid.*, p. 84). The main principle is the division of the upper intercostal muscles, vessels, and periosteum, which attach the lung to the chest wall, combined with the separation of all the extrafascial bands which hold the apex up to the neurovascular structures at the root of the neck and to the vertebral column. As a result of this the apex of the lung, with the cavity, can be displaced downwards; the cavity is flattened from above downwards and it shows less tendency to re-expand. The results within the first two months of 133 operations, quoted in this paper, are as follows. Of 77 cases in which the extrafascial apicolysis was combined with resection of 6 ribs 2 only died. There were 4 deaths out of 35 cases in which 7 or 8 ribs were resected; 4 deaths out of 21 when the apicolysis was combined with the resection of 9 to 11 ribs. In 90 per cent. of the cases collapse of the cavity could be seen on the screen, and the sputum was free from tubercle bacilli in 80 per cent.

In the combined paper the post-operative complications were studied. Attention is called to the frequency of atelectasis in varying degrees; it occurred in about half the cases. Its frequency increased with the size of the operation, and with immobilisation of the diaphragm—a strong argument against preliminary phrenicectomy. The authors summarise the risks of thoracoplasty as "essentially dependent upon the extent to which the expectoratory ability is impaired and retention of bronchial secretion occurs after the operation. The expectoratory ability is impaired by: extensive resection of ribs, suspended mobility of the diaphragm, and poorly fixed mediastinum."

Both papers are full of instructive information.

THE EVOLUTION OF HEARING AIDS

THE portable hearing aid in common use consists of a small microphone, a dry battery, and a receiver; it has been improved in detail of recent years, but suffers from several inherent defects, the result of its necessarily small size and light weight. The receiver may be a disc-shaped ear-piece, a small "button" which fits into the meatus, or a bone-conductor to be worn on the mastoid. The microphone is usually of the carbon granule variety, which is noisy when moved, works only in the upright position, emits "frying" sounds when it becomes worn or dirty, and rapidly loses efficiency as the surface of the granules become worn. The dry battery, also, quickly loses the greater part of its efficiency, and must be frequently renewed. A microphone amplifier is now often added to the instrument, especially when a bone-conductor receiver is employed, but this uses considerable more current and so exhausts the battery sooner.

The great disadvantage of these hearing aids is that the amplification is very uneven; it is usually

greatest at about 1000 cycles a second and falls off rapidly on either side, so that tones above 3000 to 4000 cycles are not amplified at all. In consequence the hearing of speech is but little improved, and such sounds as the letter S are inaudible; music is so distorted as to be unpleasant. With a larger apparatus, especially with valve amplification, these difficulties can be largely surmounted; a less sensitive but more efficient microphone can be employed, and a small accumulator may take the place of the dry battery. In consequence there is less background noise and, what is more important, a uniform or "straight-line" amplification can be obtained, or this can be increased over the higher or lower end of the scale as desired.

The apparatus is contained in a box, the bulk and weight of which was formerly a drawback, but small and light appliances are now obtainable. One of these is the Amplivox.¹ This has two-valve amplification, and a microphone containing fine carbon particles which works in any position; it is run from a small accumulator giving 60 hours' intermittent use, and a high-tension dry battery lasting from four to six months; a disc or button ear-piece may be used, or a bone-conductor can be supplied, but the makers claim that the instrument is so efficient that the latter is seldom required. Straight-line amplification is normally employed, but a low-tone ear-piece can be fitted, or a tone-control for special cases. The whole is contained in a neat leather box 6½ by 3½ by 4½ inches. An even smaller model has recently been produced measuring 5 by 2½ by 4 inches, with a 20-hour accumulator, and a smaller high-tension battery. The larger model is preferable if its size is not considered a drawback. Both instruments cost from 15 to 17 guineas; the makers claim that the cost of upkeep is but a few pence a week, and it is certainly less than that of the usual "portable" type of hearing aid where the expense of replacing dry batteries is considerable.

The apparatus which we examined gave ample volume, a quiet background, good audibility at the length of the room, and a noticeable absence of distortion; it should be far more useful than the ordinary micro-telephone aid, and especially for use at board meetings, theatres, and concerts.

A METHOD OF PAINLESS LABOUR

IN the *Journal* of the Canadian Medical Association for November L. C. Conn and J. R. Vant discuss a number of sedatives and anaesthetics for the relief of pain during labour. The drugs and method to which they give their chief support require, as they themselves insist, either that the patient shall be in an institution or else that she shall, if at home, be under the constant supervision of a medically qualified person. Their choice is for the combination of Nembutal by the mouth with paraldehyde, given per rectum half to one hour later. As a result of their investigation of a series of over four hundred confinements with various anaesthetics they find that this combination did increase the necessity for the use of "low forceps." The method must be started early in labour if it is to be of real value.

NEW PREPARATIONS

PHOSPHO-SODA (FLEET).—This is described as "a pure, non-toxic, highly concentrated, aqueous solution of the primary sodium phosphate, or monosodium phosphate." It thus differs from sodium phosphate B.P. which is di-sodium hydrogen phosphate, and is recommended as being "the same buffer salt that occurs naturally in the blood stream to regulate the body fluids." The Anglo-French Drug Co., Ltd. (11, Guilford-street, London, W.C.1), who introduce it in this country, claim that it has particular value as a saline aperient, cholagogue, and biliary stimulant, acceptable to a sensitive stomach.

¹ Amplivox Ltd., 106, George-street, London, W.1.

and not irritating to the intestinal mucosa. Its action is regarded as less drastic than that of magnesium or sodium sulphate, causing no griping at the time of evacuation. In small repeated doses it acidifies the urine, and it is considered a useful adjuvant to hexamine.

CORAMINE AS CARDIAC STIMULANT.—In our account of a sectional discussion at the Royal Society of Medicine a month ago (*THE LANCET*, Nov. 16th, p. 1122) one of the speakers is reported as saying that "he was rather surprised to hear that coramine was a cardiac stimulant, as he thought Bernard Myers's work had revealed a depressant action on the heart." We understand that the actual reference was to certain experiments made some years ago by Dr. G. Norman Myers, of Cambridge, which were performed on the isolated heart and have not been published.

Vacancies

For further information refer to the advertisement columns
All Saints' Hospital, Austral-street, West-square, S.E.—Res. H.S.
At rate of £100.

Army Dental Corps.—Commissions.
Ashford Hospital, Kent.—Res. M.O. £150.
Bath, Royal United Hospital.—H.P. At rate of £150.
Bechuanaland Protectorate Medical Service.—Two M.O.'s. Each £550.

Benenden, Kent, National Sanatorium.—Jun. H.P. At rate of £150.

Birmingham, Children's Hospital.—H.S. Also Cas. H.S. Each at rate of £75.

Birmingham Maternity Hospital.—Res. M.O. and Reg. £200.

Blackburn Royal Infirmary.—Res. H.P. £175.

Brighton, Royal Alexandra Hospital for Sick Children.—H.P. £120.

Brisbane, Queensland University.—Professorship of Physiology.

Bristol General Hospital.—Res. Surg. O. and Reg. £200. Also two H.P.'s, three H.S.'s, Res. Obstet. O., H.S. to Spec. Depts., also Cas. H.S. Each at rate of £80.

Cardiff, Llandough Hospital.—Jun. Res. M.O. At rate of £100.

Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Hon. Third Asst.

Chelsea Hospital for Women, Arthur-street, S.W.—Surgeon.

Derbyshire Royal Infirmary.—Ophth. H.S. and Anaesthetist. £150.

Doncaster Royal Infirmary.—H.P. At rate of £175.

Dover Royal Victoria Hospital.—Res. M.O. £180.

Dublin University.—Chair of Human Anatomy and Embryology, &c. £1100.

Durham, County Council, Education Dept.—Asst. School. M.O. £500.

Eastbourne, Royal Eye Hospital, Perensy-road.—H.S. £100.

East Grinstead and District New Hospital.—Hon. Consultants to Special Depts.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Hon. Clin. Assts. to Med. Out-patients' Dept.

Exminster, Devon Mental Hospital.—Jun. Asst. M.O. and Pathologist. £350.

Great Yarmouth General Hospital.—H.S. £140.

Hammersmith Metropolitan Borough.—Two Asst. M.O.'s. Each £500.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100.

Huddersfield Royal Infirmary.—Res. Surg. O. £225-£250.

Hull Royal Infirmary.—Res. Surg. O. £200.

Ilford, West Ham Mental Hospital, Goodmayes.—Jun. Asst. M.O. £350.

Kent and District General Hospital.—Hon. Dermatologist.

Leeds, —Sen. Asst. Res. M.O. £425.

London, —street.—Surg. Reg. £100.

Manchester, —Asst. Pathologist. £300.

Manchester Royal Children's Hospital.—Pendlebury, Res. M.O. At rate of £125.

Manor House Hospital, Golders Green, N.W.—Jun. M.O. £200.

Marie Curie Hospital, 2, Fitz-John's-avenue, N.W.—Res. M.O. At rate of £100.

Middlesex Hospital Medical School, W.—Clin. Asst. to Clinical Research Inst. At rate of £125.

Miller General Hospital, Greenwich-road, S.E.—Hon. Dental Surgeon.

Newcastle-upon-Tyne Royal Victoria Infirmary.—Res. H.P.'s and Res. H.S.'s. Also Anaesthetists. At rate of £50-£100-£200.

Northumberland County.—Sen. Tuberc. O. £1000.

Nottingham General Hospital.—H.S. At rate of £150.

Queensland University School of Medicine.—Professorship of Anatomy. Also Lectureship in Physiology.

Radium Institute, Riding House-street, W.—Asst. M.O. At rate of £250.

Redhill, Reigate Institution, St. John's.—Res. Asst. M.O. At rate of £250.

Rochdale Infirmary and Dispensary.—Sen. H.S. £250.

Royal College of Surgeons of England.—Examiner in Dental Surgery. Also Member to Court of Examiners.

Royal Masonic Hospital, Ravenscourt Park, W.—Res. M.O. £300.

Royal Northern Hospital, Holloway, N.—Hon. Radiologist.

Royal Waterloo Hospital for Women and Children, Waterloo-road, S.E.—Hon. Clin. Asst. for Ophth. Dept.

Royal Westminster Ophthalmic Hospital, Broad-street, W.C.—Asst. Surgeon.

St. Mary's Hospital, W.—Jun. Asst. Radiologist. £75.

St. Thomas's Hospital, S.E.—Obstet. Gynaecologist.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—Radiologist.

Sheffield, Jessop Hospital for Women.—Sen. Res. O. Also two H.S.'s. At rate of £150 and £100 respectively.

Sheffield Royal Infirmary.—Clin. Asst. to Surgical Dept. At rate of £300.

Shoreham-by-Sea, Southlands Hospital.—Jun. Asst. Res. M.O. £250.

Singapore, Straits Settlements Mental Hospital.—Asst. Med. Supt. £700.

Staffordshire General Infirmary.—H.P. and Cas. O. At rate of £150.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—Orthopaedic H.S. At rate of £150.

Surrey County Council.—Asst. M.O. £600.

Swansea General and Eye Hospital.—Res. Anaesthetist. £150.

West London Hospital, Hammersmith-road, W.—Med. Reg. £250.

Westminster Hospital, Broad Sanctuary, S.W.—Three Surg. Reg. Each £250.

Weston-super-Mare General Hospital.—Res. H.S. £150.

Wickford, Essex, Runwell Hospital.—Deputy Med. Supt. £650.

Wigan, Royal Albert Edward Infirmary and Dispensary.—Two H.S.'s. Each at rate of £150.

Wilkesden General Hospital, Harlesden-road, N.W.—Res. Cas. O. At rate of £100. Also Hon. Clin. Assts. to Out-patient Depts.

Wolverhampton Education Committee.—Asst. M.O. £600.

York County Hospital.—Asst. H.S. and Res. Anaesthetist. £150.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Shepshed (Leicester) and Alva (Clackmannan).

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Dec. 17th. 5.30 P.M. General Meeting of Fellows
Ballot for election to the Fellowship.

THURSDAY

Dermatology. 5 P.M. (Cases at 4 P.M.) Dr. H. W. Barber: 1. Lichen Planus with Herald Patches. Dr. R. D. Moyle: 2. Psoriasis with Lesions in the Mouth. Dr. W. J. O'Donovan: 3. Delayed Radium Burn. Dr. G. B. M. Heggs: 4. Pemphigus Vegetans. Dr. G. B. M. Heggs and Mr. F. A. Williamson-Noble: 5. Pseudoxanthoma Elasticum showing Fundus Changes. Dr. Murray Stuart (introduced by Dr. G. B. M. Heggs): 6. Multiple Xanthoma in a Child. Dr. F. Parkes Weber: 7. Morphea (Atrophoderma) Guttata or a Nevroid Condition, in a Young Man with Acromegaloïd Hands and Feet.
Neurology. 7.45 P.M. (National Hospital, Queen-square, W.C.) Clinical Meeting.

HUNTERIAN SOCIETY

MONDAY, Dec. 16th.—8.30 P.M. (Simpson's Restaurant, Bird-in-Hand-court, Cheap-side, E.C.) Dr. Brincker and Dr. Lennox Wainwright: Measles.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Thornhaugh-street, W.C.

FRIDAY, Dec. 20th.—5 P.M., Dr. Henry Wilson and Dr. S. W. Savage: Psychology in Relation to Public Health.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Dec. 19th.—2 P.M., Dr. D. N. Nabarro: Congenital Syphilis (IV.). 3 P.M., Dr. A. A. Moncrieff: Management of Breast Feeding.

Out-patient clinics daily at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.

WEDNESDAY, Dec. 18th.—4 P.M., Mr. Arthur Gray: Some Common Difficulties in Gynecological Diagnosis.

ST. JOHN CLINIC, Ranelagh-road, S.W.

FRIDAY, Dec. 20th.—4.30 P.M. Dr. Francis Bach: Physical Methods in the Chronic Rheumatic Disorders.

ROYAL INFIRMARY, Manchester.

TUESDAY, Dec. 17th.—4.15 P.M., Dr. J. F. Wilkinson: Addison's Disease and Suprarenal Insufficiency.

ST. MARY'S HOSPITALS, Manchester.

THURSDAY, Dec. 19th.—4.15 P.M. (Whitworth-street West Hospital), Mr. R. L. Newell: Treatment of Hernia in Childhood.

GENERAL INFIRMARY, Leeds.

TUESDAY, Dec. 17th.—3.30 P.M., Dr. Moll: Demonstration of Chest Cases.

PUBLIC DISPENSARY AND HOSPITAL, Leeds.

WEDNESDAY, Dec. 18th.—4 P.M., Mr. A. Gough: Vaginal Discharges.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

WEDNESDAY, Dec. 18th.—4.15 P.M. (Western Infirmary), Mr. R. F. Young: Diagnosis of Gall-bladder Conditions. Mr. A. B. Kerr: Treatment of Post-operative Dehydration.

BURBERRYS Sale opened on Dec. 9th and is now in progress. Copies of the sale catalogue will be sent to any medical man or woman on application to Burberrys Limited, Haymarket, London, S.W.1.

ADDRESSES AND ORIGINAL ARTICLES

THE CARE AND TREATMENT OF
DIFFICULT CHILDREN*

BY REGINALD MILLER, M.D., F.R.C.P. Lond.

PHYSICIAN TO ST. MART'S HOSPITAL AND THE PADDINGTON
GREEN CHILDREN'S HOSPITAL, LONDON

THE opener of a medical discussion, like an opening batsman at cricket, is expected to exhibit the more stolid qualities of his kind; but even if I felt possessed of such attributes, I should be inclined to wonder if the time were opportune for their display. Of recent years the alleged abnormalities in the psychology of children have been so intensively studied that it might be questioned if we have not had more than enough of this solemn analysis of the ways of childhood. Children are children, it might be said; they are a race apart inhabiting a country of their own, and if they are to be haled before our own sober tribunals they become dispossessed, and if they are to be judged by our own strict standards they are in danger of being forced to accept the status of aliens or lunatics. With such views I have an uncomfortable feeling of sympathy, especially when I recall how children have ever been fair game for enthusiastic theorists. Yet a child of its own innate grace can thrive in all sorts of atmospheres and has its own way of evading all sorts of perils; and I take comfort in the thought that in every large catastrophe of which I ever read—landslide, flood, or earthquake—there is always at the apex of the heap of ruins a small baby, placid and unharmed, engaged in defiance of its medical advisers in sucking its thumb.

Even with this good omen there is a need for caution for the present position is peculiar. The subject of child psychology, handed on from the medical profession, has turned the heads of the public, and it would be rash to say that its study has affected the imaginations of the laity alone. Widely organised efforts are being made to teach parents how to deal with their children's behaviour. When such teaching is confined to the simple sort adapted to the capacity of the uneducated, it may readily be imagined that the results, if any, are beneficial. But in the case of the educated, to whom the world's psychological literature is open, is the ultimate result going to be as satisfactory as is hoped? Already we meet parents who are tinkering at their children's psychology as they used to tinker at their insides, and it is not every mother that can imbibe with comfort the psychological hypotheses of the moment. More particularly the perpetual teaching that present troubles are the fruit of past unpreventable incidents is an uncomfortable doctrine for discerning parents, for it introduces a fatalistic note which is by no means the only sign in the psychological world of to-day of a culture alien to our own. To press such teaching indiscriminately far and wide doubtless appeals to those whose belief in it is less faltering than my own, for I confess that to me the besetting weakness of psychologists is the way in which they tend to link directly together cause and effect in a manner often too facile to be convincing. Nor do their explanations of the origin of symptoms by any means tally, though they are united in claiming good results for their several methods of treatment based on their different

hypotheses. These good results may be unhesitatingly accepted; but the chief interest lies not in results but in the means by which they are brought about. I believe myself that far too little credit is given to the beneficent effects of the passage of time and the gradual development of the child. There is so much inborn in almost every child that tends to enable it to right itself, so that as time passes and new interests unfold themselves, the child quite naturally gains in sense and poise. Occasionally the alteration in a child's mental stance is sudden, as in the case of a little friend of mine, who having spent her first year at boarding-school evading the observation of those in authority, returned last September for the beginning of her second year. The glories of her enhanced position were reflected in her first letter home: "Darling Mummie," she wrote, "the school is lousy with new kids."

I shall make no attempt to define the term "difficult child." In my view the great majority of children can be included at some time or other in their lives, though I suppose that when we employ this term we are chiefly thinking of the neurotic and undisciplined, the delicate and unhealthy, and perhaps a very small sprinkling of really psychopathic children. We can therefore exclude but few children except the mentally defective and the so-called backward child. In the last-named I am no great believer; where backwardness is anything more than temporary some degree of deficiency or enfeeblement is present. This may not amount to feeble-mindedness as officially defined, but it comes within the scope of the unofficial definition of a moron. This is of so kindly and satisfying a nature that I cannot forbear to quote it: a moron, it says, is one who does the work of three permanent officials in a government office.

The subject of the care and treatment of difficult children is so closely connected with aetiological considerations that I do not see how in our discussion on the treatment of these troubles we can exclude our views on their various causative factors. In the few headings which I am putting before you as subjects for discussion I am making no attempt to keep strictly apart questions of causation and those of treatment.

ENVIRONMENT

To take first the circumstances of the home-circle and school-life, all are agreed in emphasising the importance of faults in up-bringing in the production of difficult behaviour in children, and many rely almost exclusively on their modification for the improvement in the child which they wish to effect. We are teaching the lay public that these things are in the direct relationship of cause and effect, and I cannot help wondering if we are not in danger of going further than is strictly true. If we are exaggerating, we are increasing the anxieties of parents in a most undesirable way. When we consider these reputed causative factors we are struck in the first place with their infinite number and variety. It is clear that we shall never lack explanations for any sort of behaviour in a child, and that it would need an extraordinarily happy concatenation of circumstances to enable any child to avoid contact with all these possibilities for harm. As a matter of fact we know well enough that no child ever lacks opportunities for being difficult if it is so disposed, yet what numbers of children pass them by and remain unspoiled and unspoilable. I am sure that many here possess just such children:

* Being the opening address at a discussion held by the Medical Society of London on Dec. 9th.
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"if," as the mother is reported to have said, "my children were not the nicest on earth, I should be the first to notice it." Secondly, it is at least remarkable that these reputed causative factors are so often the exact opposite of each other. There is, for instance, the anxious over-indulgent mother, and the cold, neglectful, or jealous mother; there is the child whose mind is kept unoccupied and at a loose end, and the child who over-exerts to keep up with older children; there is the atmosphere of rigid over-bearing discipline, and the atmosphere with no discipline of any sort; and the list of environmental faults, plus or minus, could be indefinitely prolonged. Yet to all these opposite faults is attributed a mental reaction which is fundamentally much the same in all so-called difficult children—namely, a negative unreasonable attitude which the child adopts in order to gain its own ends.

Therefore I would suggest that these faults in home environment on which so much stress is laid do not act as more than determinants, determining the nature and the time of the child's symptoms. To regard them as the *fons et origo* of the symptoms is going, I think, too far. Between the faults in environment and the symptoms they appear directly to cause, there are in reality many links, two of which are of vital importance—namely, the innate psychological make-up of the child, and its physical condition and health.

TEMPERAMENT

In the innate psychological make-up of the difficult child, conveniently called its temperament, we have, I believe, the most important single factor in the production of its troubles. About this it is impossible here to say more than that the commonest type of difficult child is the imaginative child, usually clever but sometimes too scatter-brained to appear so, whose chief characteristic is that fatigue is so readily induced in it and produces, not a healthy desire for rest and sleep, but restlessness and irritability with a danger of further exhaustion. It may be urged that in the treatment of difficult children it is no use wasting time on these inherent characteristics as we cannot alter them. This is, I think, quite true, and might well be said more frequently and more loudly than it is. But, on the other hand, the passage of time and the development of the child do vastly alter the pattern of a child's mind, usually to the advantage of everyone. Thus the old-fashioned prognostic phrase which one still has sometimes to use somewhat shame-facedly, that a child will "grow out" of its outrageous ways, seems to be a perfectly accurate forecast of what does in fact take place. We ought not to deceive ourselves that by modifying certain superficial matters in a child's life we are producing those fundamental alterations which are the natural results of growth and development.

PHYSICAL HEALTH

The effect of physical ill-health on the mentality of a child is far greater than is denoted by the lip-service paid to its importance by psychologists. Its influence may be seen in two ways. In the first place illness may profoundly alter a child's mentality and be thus the true cause of its mental symptoms. Coeliac disease is a good instance of this. Where shall we find a more negative, difficult, and impossible child than in an untreated case of coeliac disease? Yet they are all curiously alike, simulating each other in even quite small details; and recently when I had charge of one of the very few examples of sprue in an English child, I was interested to see how

exactly the mentality of the coeliac child was reproduced. Another though milder example of the same thing is afforded by rheumatic infection in children. Long before overt chorea is set up the rheumatic child shows symptoms of nervous instability such as emotionalism, night-terrors, sleep-walking, enuresis, tics, and so on. Secondly, the nature of the ill-health may determine the nature of the nervous symptoms. I should say, for instance, that none of the major perversions of appetite, such as persistent refusal of food, apparently volitional vomiting, pica, and the eating of bedclothes, arise in children whose digestions are in good order, though it must be allowed that the habit may remain after the digestive disturbance has been put right. In some instances the nature of the ill-health may be obscure. The present discussion which is going on about the so-called acidosis attacks of children affords an example of this into which I do not propose now to enter.

It is not as a rule hard to recognise that a difficult child is fatigued or out of health, and if found these conditions require strict treatment however interesting the psychological picture may be. In the presence of persistent fatigue or ill-health wide allowances should be made for a child's misbehaviour on these grounds alone.

PARENTAL INFLUENCE

As parents to-day are subjected to so much criticism, in which they are only too ready to believe, it would be interesting to hear what are regarded as the most desirable attributes of a mother. For myself I should say that the first essential is that a mother should enjoy her child, regarding it neither as a nuisance nor as a rival, and still less as a nervous disease. Secondly, that her love for her child should be shown in something more unselfish, deeper, and more supporting than mere protection. The "tigress" love of the widowed mother, although we can readily understand and sympathise with it, is productive of endless difficulties. Difficult children cannot be successfully treated by superabundant protection; to borrow a term from physical medicine what they want is a process of desensitisation, so that normal stimuli do not evoke such excessive responses. There are, however, so many attributes that one would desire the ideal mother to possess that I must leave it to others to dilate upon them. Not every child wants the same sort of mother, which reminds me what excellent mothers some fathers make.

DISCIPLINE

To turn to the question of the effect of discipline on difficult children, the ideal discipline is less a matter of rules and regulations than a matter of atmosphere. This, though imponderable, can influence a child profoundly. This is one of the things in which a good preparatory boarding-school may have a great advantage over the home, and explains why so many difficult children learn to behave reasonably first at school and only later at home. The atmosphere of a preparatory school depends on the head working through the staff and senior pupils, thus forming a powerful public opinion. In such an atmosphere the child becomes gradually acclimatised, ceases to wish to be peculiar, and eventually learns (or as it thinks, chooses) to behave reasonably. In a well-run preparatory school there are but few failures in this respect.

Another advantage that a school has over the home lies in the fact that the affections are not so heavily engaged. The child is therefore watched over by someone who is neither shocked nor heart-

broken at anything it may do. Almost anything that a small child can do in the way of naughtiness will certainly have been done before without any disaster ensuing, and allowances are readily made. With the judicious use of the blind eye and an occasional unpalatable punishment, misdemeanours and scenes cease to be either advertisements or adventures, and with plenty of other interests to take their place they become dropped.

Punishments, at all events as given in the home, are not of much value in the correction of difficult children. Rewards, which I suppose are sorts of negative punishments, are slightly more useful, and general encouragement is very necessary. Nevertheless I am afraid that it is true that the more blatant difficulties do not arise in children who can rely upon getting something analogous to a sound clip over the ear if they transgress unreasonably. Although no one of us would countenance such proceedings, it cannot be denied that as a punishment this has its points: it is immediate, it is unpleasant, and it is soon over. Unreasonable children are seldom benefited by punishment as (very irritatingly) they fail to see the justice of it; but if punishment is going to do any child good (and I am not here referring merely to corporal punishment, which is hopeless for nervous children) it should be ordered in cold blood and with at least some show of reason behind it, so that the child should be left with the idea that it has been foolish to let itself in for such an unpleasant affair. It is essential that the child, having paid its price, should get its forgiveness and reinstatement. The element of disgrace should be kept at a minimum, for a child's sense of justice enables it to see that to be both punished and kept in disgrace is not fair. To keep up a continuous atmosphere of disgrace and to arrange a series of punishments by deprivation or otherwise, the scheme of things now called "sanctions," is psychologically to mishandle any child. Rest in bed is the best of all corrective measures, and may be usefully employed as a preventive to forestall outbreaks in a tired child. It may be used with little or no idea of punishment, but if meant as a punishment the confinement and isolation should be regarded as its essence. To ensure benefit from the rest the child should not be kept with nothing to think of but its misery: books should be allowed and its supply of food should not be curtailed.

PSYCHOPATHIC CHILDREN

I must say at once that I know very little about, and see almost nothing of, what I should term psychopathic children apart from some sexual cases, more distressing than serious, and the moral defective group of mental deficiency. Although I have seen many children go through phases of telling lies, stealing, running away from school, and things of that sort, they have all in the end turned out to be remarkably like other children who have done none of these things. I do not remember ever having seen what I should call kleptomania in a child, and I am certain that I have not known of a child suicide. How far this is all due to questions of classification and nomenclature I do not know, nor can I tell how numerous are children whom I should recognise as psychopathic. I take them to be of a class differing essentially from the ordinary so-called difficult child, and I presume that they require different care and treatment.

About psycho-analysis I have no practical knowledge whatever, but I am fortunate in having friends in the psycho-analytical world, and as may be readily imagined we fall to discussing these things.

Psycho-analysis is in such bad odour with those of my generation that I should like at least to pay tribute to the sincerity and even the humility of a group of physicians who are attempting to approach the problems of child psychology by this route. Having said this I must in candour say that I doubt if psycho-analysis could ever be a correct form of treatment for a neurotic or psychopathic child, but I should like to think that as a method of investigation it might lead to useful conclusions to be applied in other cases without submitting every fresh child to the process of analysis. But I must confess that whether I consider the hypotheses on which psycho-analysis is based or the conclusions reached by its employment I see little to support such a hope for its future use.

CONCLUSIONS

To try to draw some conclusions from these disjointed remarks, I submit the following:—

(1) In physical medicine, in the treatment of delicate, subnormal, or unhealthy children, we adjust, modify, and correct certain details, we do our best to avoid upsets in the form of exacerbations or illnesses, and we stand by to watch the child's health right itself by natural processes in the course of time. So, I suggest, on the psychological side, we make our modifications, we avoid upsets in the form of storms and pitched battles with the child, and with time and development the child, by natural means, rights itself.

(2) The lay public has taken up the subject of child psychology with some enthusiasm, and is very ready, as usual, to exaggerate our knowledge and the value of the help that we can give. Psychologists who have so much the ear of the public just now should get this corrected for the sake of the children.

(3) Insistence on the view that so many of the children's faults are direct results of parental faults or stray accidental events may easily develop a dangerous anxiety in the minds of parents. Children have suffered enough from the mother who is over-anxious as regards their physical health; it is not pleasant to contemplate what their lot will be like when the same type of mother tackles their psychological health.

MACROCYTIC HÆMOLYTIC ANÆMIA

REPORT OF A CASE

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HÆMOLYTIC ANÆMIA appears in many guises; between acholuric jaundice and the acute type described by Lederer we may recognise an ascending series of anemias, of increasing clinical severity. These cannot readily be classed as separate entities, since their essential features are the same. The difficulty in classification¹ depends chiefly on lack of sufficient information, and accordingly it seems justifiable to record a further case.

The importance of this group of grave anemias appears to lie in the uncertainty of their response to various lines of treatment. Lederer's anæmia is cured by the transfusion of blood, while at the other end of the scale splenectomy for the most part cures

the acholuric jaundice. For the intervening types no certain therapy is forthcoming. Indeed, it is these intermediate cases of hæmolytic anæmia that are characterised by the failure of all available remedies.

Case Record

A woman, aged 22, was admitted to Westminster Hospital on Dec. 14th, 1934, complaining of lack of energy and breathlessness of four months' duration; her duties as a children's nurse had recently seemed more of an effort. Previously she had been of robust health and usually carried a high colour, tanning easily with the sun. As a child she had whooping-cough, measles, and chicken-pox. At 16 her nasal septum was operated upon. One year later, after a mastoid operation, she was treated at the London Homœopathic Hospital with pills for "anæmia," her face at that time being, in her own words, "the colour of cheese, but not yellow." At the age of 18, one and a half years later, she again became anæmic; treating herself by rest in bed she was soon well. One year ago she was in bed for a week with influenza.

There was no history of indigestion, abdominal pain, or vomiting. Her tongue was never sore. There were no paræsthesiæ, but her hands always had a tendency to become "dead"; her legs had never felt awkward. For the last 12 months she had noticed that if she bled from a cut her blood was "watery." No tendency to bruising or hæmorrhage. Catamenia, starting at age of 12, had always been irregular, and for the last four months had been scanty; never menorrhagia. Bowels and micturition healthy. Appetite good. Some recent loss of weight.

The patient is the older of two girls, her sister being alive and in strong health. Mother, aged 49, alive and well. Father killed in Great War. No family history of anæmia or jaundice obtainable on careful inquiry. No history of contact with toxic chemicals or of drug-taking.

EXAMINATION

Temp., 99.6° F.; respirations, 24; pulse-rate, 120. Weight, 9 st. 8½ lb. A plump, well-nourished, intelligent girl with an obvious pallor of transparent yellow tinge, noticeable especially on the ears and palms of the hands. Mucous membranes similarly pale. Her cheeks in contrast carry a pronounced malar blush. No icterus of sclerotics. Multiple varicella scars present on trunk, and diffuse patches of pigmentation of irregular outline over lower chest. Legs somewhat hirsute; the pubic hair has a tendency towards male distribution. No petechiæ or ecchymoses. No œdema. Finger-nails normal. Tongue smooth, moist, and slightly coated. Teeth crowded, with many fillings. Gums and fauces pale but healthy.

Abdomen: Normal contour. Liver soft, not tender, enlarged 2-3 in. below right subcostal margin. Spleen

firm; enlarged so that tip is just palpable without inspiration. No friction rub heard over either organ. No ascites. No tenderness. *Cardiovascular system*: Radial pulse full, with regular tachycardia; not collapsing. Arteries normal. Heart not clinically enlarged; mitral first sound reduplicated; no murmurs or other abnormality detected. No failure. Blood pressure 150/70. *Respiratory system*: Nose breather. Lungs normally resonant; air entry equal; no adventitious sounds; bases clear. *Central nervous system*: Power, sensation, cranial nerves, deep, and superficial reflexes show no abnormality. Optic fundi very pale; no hæmorrhages; edge of disc indistinct owing to generalised retinal pallor. *Urine*: Specific gravity, 1026; acid; no albumin, sugar, or bile.

PROGRESS AND SUBSEQUENT INVESTIGATIONS

The blood counts are shown in the accompanying Table. Dec. 15th, 1934.—Stools: no occult blood.

Dec. 18th.—Fractional test-meal: Free acid maximum 0.005 per cent. HCl after one hour. Bile in all specimens. No blood or excess of mucus.

Dec. 20th.—After a control period of six days without treatment, daily injections of liver extract (Campolon) 2.0 c.cm. intramuscularly were started.

Dec. 21st.—Van den Bergh: Direct negative; indirect strongly positive. Bilirubin 4 units (1:50,000).

Dec. 28th.—Urine: no oxyhæmoglobin. Chemical tests for blood negative. Bile and bilirubin absent. Blood Wassermann and Kahn tests negative; Meinicke doubtful.*

Dec. 30th.—Campolon stopped. No change in clinical condition. Treatment by iron commenced (mist: ferri et ammon: cit: grs. 30 t.i.d.).

Jan. 3rd, 1935.—During the three weeks since admission has had a persisting intermittent fever with steadily rising pulse-rate. Pallor has increased. Pounding sensations of heart prevent sleep. Pulse now collapsing. Re-examination of heart: presystolic thrill and murmur at cardiac impulse; second sound normal at apex and pulmonary base; no diastolic murmur. Blood pressure 125/65. Lungs clear. No œdema anywhere.

Jan. 4th.—Blood transfusion (1). Group IV. 350 c.cm. citrated blood.

Jan. 5th.—Price-Jones curve: (Dr. Hawksley) M.D. = 8.1975μ, σ = 0.6735μ, v. = 8.2148 percent. Megalocytosis 29.2 per cent., microcytosis 0 per cent.

Jan. 7th.—Improvement in appetite and palpitations. Blood picture unchanged. Electrocardiogram normal.

Jan. 9th.—Blood culture: (aerobic and anaerobic) no growth after six days. Blood transfusion (2) 500 c.cm. citrated blood.

Jan. 10th.—In statu quo. No clinical lessening of degree of anæmia. Late diastolic apical bruit detected.

* Dr. Pulvertaft informs me that the Meinicke reaction is frequently untrustworthy in cases of hæmolytic icterus.

TABLE OF BLOOD COUNTS

				December, 1934.				January, 1935.											
				4th	11th	19th	31st	8th	14th	15th	18th	19th	20th	21st	23rd	24th	25th	26th	
Hæmoglobin (per cent.)	..	..	45	45	..	30	T 30	T 28	T 38	T* 50	..	..	35	40	22	T 40	T 52		
Red cells (mill./c.cm.)	..	..	1.54	1.57	..	1.35	1.78	1.28	..	2.03	..	..	2.39	..	..	..	..		
Colour-index	..	..	1.5	1.5	..	1.1	0.9	1.2	..	1.25	..	..	1.1	..	..	..	..		
White cells (thous./c.cm.)	..	..	7.4	5.1	..	8.2	7.3	5.7	..	5.2	..	..	19.0	..	..	45.5	59.9		
Polymorphs (per cent.)	..	..	80	90	..	90	..	80	..	83	..	..	94	..	..	96	89		
Lymphocytes	..	..	13	10	..	8	..	17	..	11	..	..	5	..	..	3	8		
Monocytes	..	..	1	..	..	2	..	2	..	5	..	..	..	..	..	..	..		
Eosinophils	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
Basophils	..	..	1	..	..	..	..	1	..	1	..	..	..	..	..	1	3		
Diameter of R.B.C. (μ Halometer reading)	..	..	8.3	8.3	..	8.5	8.1	..	..	7.1	..	..	8.1	..	..	8.8	++		
Normoblasts (per 100 leucocytes)	..	..	..	50	..	..	..	456	..	104	..	..	Sc.	..	..	+	++		
Punctate basophilia	..	..	..	..	..	++	..	..	..	++	..	..	++	..	..	++	+		
Polychromasia	..	..	..	..	..	++	..	..	..	++	..	..	++	..	..	++	+		
Aniso- and poikilo-cytosis	..	..	..	..	..	+	..	..	..	+	..	..	+	..	..	..	..		
Reticulocytes (per cent.)	..	..	..	60	..	64	40	77	..	19	..	..	<5	0	..	..	..		
Fragility of R.B.C. (per cent. NaCl)	..	..	..	0.38	0.35	0.45	..	..	..	0.35	..	..	0.55	0.35	..	..	..		
						(a)		(b)		(c)									

(a) Platelets 300,000; Group IV.; cold fixation of hæmolytic at 37 and at 0 degrees C. absent. (b) Cabot's rings present. (c) Bleeding time 1 minute 30 seconds. T After transfusion. * Operation (splenectomy). Sc. = scarce.

Jan. 11th.—Tachycardia, splenomegaly, and pallor persist. Patient feels no better. Stools: neutral fats 1.2 per cent., free fatty acids 1.45 per cent., soaps 14.05 per cent. (per cent. by weight of dried faeces).

Jan. 14th.—Menstruating. Blood transfusion (3) 600 c.cm. citrated blood.

Jan. 16th.—Blood transfusion (4) 500 c.cm. citrated blood. Spleen now appears softer and smaller than previously.

Jan. 18th. Operation (Mr. C. Price Thomas).—Splenectomy under general anæsthetic (gas, oxygen, and open ether) via left upper paramedian incision. Muscles and fat seen to be of normal colour. Liver enlarged, soft, and deep red. No gall-stones present. Spleen of firm consistency; weight 29 oz.; dark in colour; no perisplenitis or adhesions; no infarcts; splenic vein not sclerosed. Blood transfusion (5) given during operation (650 c.cm. citrated blood). Pulse-rate kept below 140 per minute; six hours later fell to 104 where it remained steady.

Jan. 19th.—Retained her colour; condition good; feeling better.

Jan. 22nd.—Clinically more icteric. Sclera definitely jaundiced. Pulse-rate, 120. No cardiac murmurs now audible.

Jan. 23rd.—Very pale and of greenish hue. Drowsy. Temperature and pulse-rate rising. (T. 103°; P. 130-140.) Pulse rapid; low tension. Lungs clear; no basal congestion. Wound appears healthy. No œdema. No complaint of pain. Tongue moist and clean. Bowels open naturally.

Jan. 24th.—Worse. Much air-hunger; respiration-rate 35 per minute. Pallor extreme. Drowsiness marked. Wound edge reddened and apparently infected. Rapidly lapsing into state of coma. Thought to be bleeding internally. Sod. citrate (30 c.cm. 30 per cent.) given intramuscularly as a hæmostatic, together with blood transfusion (6) 450 c.cm. citrated blood. Immediate improvement in general condition and fall in temperature to 98.4° took place.

Jan. 25th.—Condition remained better for next twelve hours; able to take fluids well by mouth. Sudden rapid deterioration then occurred, with increased drowsiness. Blood transfusion (7) 500 c.cm. citrated blood given with further intramuscular injection of 30 per cent. citrate. Urine contained albumin and blood.

Jan. 26th.—Incontinence of urine and faeces. Streptococcus grown from abdominal wound. Sutures accordingly cut for purpose of drainage; thin sanious discharge containing fat droplets seen in wound. No degree of local inflammatory reaction present. (T. 102-104°; R. 25-40; P. 130-160.)

Jan. 27th.—Died at 7.45 A.M. in deepening coma.

POST-MORTEM FINDINGS

Autopsy was performed by Dr. R. J. V. Pulvertaft. The body was well-covered and fat rather than wasted. Skin pale and jaundiced. Scars on legs, arms, and abdomen of recent surgical operations. Body-fat pale yellow, in marked contrast to red muscles. Heart small. Weight 10 oz. Right auricle much dilated. Valves normal. Aorta normal. No subpericardial or subendocardial hæmorrhages. Endocardium pale. No tabby-cat striation. Lungs small (right 16 oz., left 13 oz.). No hæmorrhages beneath pleura. Slight basal congestion both sides. Fibrin reaction on dome of left diaphragm, with a little serous fluid in left pleural cavity.

Abdomen: No free blood found. Excess of free serous fluid present containing fat droplets. Intestines adherent in pelvis and round wound by recent fibrin. Peritoneum glistening, with no definite inflammatory areas. Subperitoneal hæmorrhages along free border of ileum. Two spleniculi at tail of pancreas, the largest, size of pigeon's egg, much infarcted. Site of wound appeared healthy. Mesenteric lymph glands normal. Hæmolympth glands in aortic group. No hæmorrhage into lumen of bowel. Stomach normal. Liver pale in colour; weight 60 oz., free iron reaction positive. Gall-bladder contained very dark bile, but no calculi. Kidneys small, pale, and fatty; weight of each 5 oz.; no clear line of demarcation between cortex and medulla; capsule stripped easily; free iron present.

Bone-marrow (shaft of right femur) very deep red suggesting great activity.

HISTOLOGICAL REPORT

Spleen removed at operation during life showed no undue fibrosis, and no siderotic nodules. It was intensely engorged, giving marked diffuse reaction for free iron. No infarct present. Splenunculus contained infarcts crowded with Gram-positive cocci. Liver: Acute yellow atrophy. Little normal hepatic tissue remains. Diffuse free iron reaction. Kidney: Glomerular infarcts of Gram-positive cocci. Slight free iron reaction. Bone-marrow: Intensely cellular. Many nucleated red cells. Other elements not recognised. Heart: Normal. No free iron reaction.

Discussion: Diagnosis

Davidson² has collected nine cases resembling both pernicious anæmia and acholuric jaundice which do not fit accurately into either group, and has classified them from the causal factor, which was either known or unknown. The present case resembles his second group, since no ætiological factor was discovered. Although there is a history of mastoid operation and, in the terminal stages, a streptococcal infection of the wound occurred there is not sufficient concrete evidence here to attribute the whole course of the anæmia to infection, a factor considered by other writers^{3,4,5,6,7} to be of great importance in the ætiology of acute hæmolytic anæmia. This, they contend, is supported by the presence of pyrexia; however, Joules and Masterman⁸ attribute the fever to the active regeneration of blood. It is also well recognised that cases of severe anæmia tend ipso facto to be febrile. The presence of a blood infection was indeed considered here, but the absence of embolic lesions and a negative blood culture did not give support to this view, despite progressive changes in the heart sounds, a phenomenon which has been observed before⁹ in association with severe anæmia. The question of a chronic infection of the portal tract is discussed at the end of this paper.

On admission the condition merited the diagnosis of pernicious anæmia; incompatible with this, however, were the subsequent findings of free gastric hydrochloric acid, a high and rising reticulocyte count with a falling erythrocyte count, and a negative response to liver treatment. Chronic poisoning by lead,² arsenic,⁷ and zinc¹⁰ have caused anæmias with similar features, but in this case there was no evidence of metallic intoxication. Finally, the somewhat indefinite story of preceding bouts of pallor raised the question of acholuric jaundice. Although no hæmatological tests were carried out on her direct relatives a detailed history revealed no familial taint; the heredity of this condition is well established.^{11,12} From the main features, therefore, this may be considered to be a chronic form of the acute hæmolytic anæmia of Lederer, but, unlike the acute disease, blood transfusion did not cause a remission.

BLOOD PICTURE

The presence in the blood of normoblasts and reticulocytes in large numbers, indicating active hæmopoiesis, together with a progressively falling hæmoglobin value and red cell count, and a positive indirect van den Bergh reaction in the serum, indicated that blood destruction was proceeding at an even greater rate than blood formation. Autohæmolysins were however not present in the serum.

The mean diameter of the erythrocytes was above normal, a finding which agrees with previous reports,^{2,6,34} but fails to confirm the statement of O'Donoghue and Witts⁵ that megalocytosis is not

present in acute hæmolytic anæmia. A possible explanation of the megalocytosis here would be that the diseased liver, known to be enlarged initially and seen after death to be grossly pathological, was preventing storage and utilisation of the anti-anæmic principle, although one would expect liver therapy to have been effective if this were the case. The mean diameter of the red cells was unaltered by splenectomy and transfusion, which tends to occur in acholuric jaundice.³⁵

The constantly high colour-index agrees with the majority of recorded cases,^{2 5 6 36} yet cases of a hypochromic type have been published.^{4 15} It is of interest to note that in acholuric jaundice the colour-index, which characteristically is high,¹⁶ falls during severe hæmolytic crises.²

The pronounced polymorphonuclear leucocytosis which occurred after splenectomy may be regarded as mainly physiological, since it is a regular sequela of this operation. The leucocyte count previously had been on the low side of normal. Lederer's original cases^{7 3} were characterised by a frank leucocytosis, but more recently similar cases have been reported^{4 8} in which this was not a feature. In acute hæmolytic anæmia the white cell count may so resemble that of acute leukaemia²⁴ that differential diagnosis is difficult; the picture is sometimes complicated by the presence of a large percentage of immature cells.⁶ No primitive cells of the granular series were seen in the present case; but an Arnetz count was not made, and therefore no information is available on the age of the polymorphs. A terminal rise in leucocytes has been recorded in similar cases of this form of anæmia by Shackle²⁵ and following splenectomy by Davidson (Case 6²).

PATHOLOGY

The absence of local inflammatory tissue reaction in the wound made it unlikely that wound infection was here responsible for the excess of polymorphs in the peripheral blood. If we were to ascribe the leucocytosis to the streptococcal wound infection we would also have to dismiss the possibility of correlating this finding with that of acute necrosis of the liver, which pathologically resembled closely the picture of acute yellow atrophy in all but reduction in size of that organ. Patients suffering from acute yellow atrophy are usually found to have an appreciable leucocytosis,^{26 27 28} and this is stated to be characteristic.²⁹ The association of acute diffuse hepatic necrosis with secondary streptococcal infection has frequently been confirmed.^{30 31 32 33} The action of agencies damaging the liver is aggravated by bacterial infection, so that it seems probable that the infection was here the primary agent causing terminal necrosis of the liver and a leucocytosis indirectly. In Lederer's cases³ the liver was histologically normal.

The acute onset of collapse with urgent symptoms of blanching, rising pulse-rate, and air-hunger, temporarily relieved by blood transfusion, are difficult to explain in the absence of hæmorrhage. Similar symptoms are reported^{28 29} in association with acute hepatic failure, and it may well be that this was a case of chronic diffuse infection of the portal system, with hepatitis and splenitis, ending in an acute exacerbation. It is reasonable to suppose that this infection was responsible for the earlier features of the case by inducing the hæmolysis and the other blood changes due to inability to utilise hæmatinics. Attractive as this theory is, the question of diagnosis must finally remain in some doubt. A dogmatic

diagnosis is impossible without some speculation and theory, since the evidence is insufficient to permit of further differentiation. It therefore rests between a hæmolytic anæmia due to chronic infection and acholuric jaundice; the points in favour of each have already been discussed.

TREATMENT

The effect of blood transfusion in hæmolytic anæmias in the opinion of Parsons and Hawksley⁶ is to supply some missing factor to and at the same time to rest the over-active bone-marrow. The disappointing result of transfusion in the present case, which also occurred in three of Davidson's cases,² must not be confused with the fatal termination which sometimes¹² takes place in acquired acholuric jaundice after transfusion. In view of the presence of autohæmolysins in the latter Whitby and Britton¹³ advance a special caution against the transfusion of these patients, which may be followed by severe hæmolytic crises; this, indeed, is the probable explanation of Payne's case⁴ of acute hæmolytic anæmia ending fatally after transfusion. It is interesting to note that Christiansen¹⁴ considers transfusion probably unnecessary in the more benign cases of acute hæmolytic anæmia, which tend to recover spontaneously. The effect of repeated transfusions in the present case was no more than temporarily beneficial; this being due solely to the elevation of the hæmoglobin level which was unable to be maintained owing to the persistence of the active hæmolytic process.

The negative response to parenteral liver extract is described by several authorities^{2 3 5 8 15} and appears to be characteristic. In the present case the reticulocyte count (60-70 per cent.) was unusually high even before liver therapy was started, and no change was observed during further treatment with liver. This again is in accordance with previously reported cases.¹² In the acute Lederer type a figure of around 10 per cent. is usual.^{1 3}

After the failure of treatment by liver and blood transfusion it seemed reasonable next to advocate splenectomy on the assumption that the correct diagnosis was acholuric jaundice, in which removal of the spleen is usually followed by improvement.^{1 12 16 17 18} The course of the disease, however, was little affected by splenectomy, although a marked reduction was observed in the reticulocyte count; very similar results have been recorded in this type of anæmia by Davidson,² and the diagnosis, rather than being confirmed, became even more obscure.

FRAGILITY

An unusual feature to which allusion has still to be made was the normal fragility of the red blood-cells, save for a slight increase after splenectomy for one reading only. In acholuric jaundice the fragility is usually but not invariably increased. According to Hillier¹⁹ it is the range of fragility that is typically increased in that malady. A normal fragility occurs in 10 per cent. of cases.²⁰ The effect of splenectomy on the fragility is to leave it unchanged or to diminish it,¹⁶ but cases are reported^{18 21} in which it is increased. Dawson¹² concludes that in acholuric jaundice the fragility is variable and not parallel with the severity of the anæmia, jaundice, or splenomegaly. In acute hæmolytic anæmia, on the other hand, the resistance of the red cells is often normal but may be lowered in the active phase of the disease and return to normal on recovery. Unless the red cells are washed free of plasma before testing, this undue fragility may not become

apparent.⁵ Recently Whitby and Hynes²² have stressed the advantages of a quantitative technique (Simmel's modified) in the investigation of fragility. According to them capillary blood is subject to extraneous variations, and therefore exceedingly delicate refinements are of no value. Blood from venepuncture is more constant and should be used. Since the simple qualitative test and not the above technique was employed in the present series no deductions can be drawn. This technical factor may explain the apparent discrepancy of opinion that prevails with regard to fragility in hæmolytic anæmia. It has been suggested²³ that the reticulocyte is more fragile than the mature erythrocyte. In an attempt to explain the normal fragility in the present case it was held that the reticulocytes were possibly less fragile than the red cells and, being present in large numbers, would tend to mask the possibly increased fragility of the latter. The opportunity afforded by these conditions was seized and a series of experiments on the fragility of the reticulocytes was carried out by Dr. Pulvertaft and myself in an endeavour to solve the problem. It was interesting to note that our results agreed completely with the conclusions of Whitby and Hynes that the reticulocytes and red cells are of equal fragility.

Technique.—Blood was taken from the ear into reticulocyte fluid† and allowed to remain for 15 minutes. The cells were then spun down and re-emulsified in 0.9 per cent. saline. They were then suspended in solutions of sodium chloride at varying concentrations down to 0.3 per cent. NaCl and examined under a coverslip with a one-twelfth. At intervals of 10 minutes counts were made of reticulated and non-reticulated cells. Actual lysis of cells was also observed under the microscope. No increase of fragility of either cell was noted. Suspensions in dilute saponin were also made. Lysis was here too quick to enable a differential count to be taken.

SUMMARY

A case of subacute hæmolytic anæmia of undiscovered ætiology is described in a girl of 22 years. Treatment by liver, iron, blood transfusion, and splenectomy all failed in turn to improve her condition, and a terminal streptococcal infection complicated the final picture. The fragility of the red cells was normal. The autopsy finding of acute necrosis of the liver is unusual. The case is discussed with special reference to pathology, blood changes, diagnosis, and treatment, and the literature is reviewed. A short digression on fragility is included. The probable cause of the anæmia was thought to be either acholuric jaundice or an infective process.

My thanks are due to Dr. W. E. Lloyd for permission to publish this case, to Dr. R. J. V. Pulvertaft for pathological investigations and the post-mortem report, and to Dr. L. E. H. Whitby for suggestions and helpful criticism.

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(Continued at foot of next column)

DIAGNOSIS OF VITAMIN-C SUBNUTRITION BY URINE ANALYSIS

QUANTITATIVE DATA—EXPERIMENTS ON CONTROL
SUBJECTS

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IN a previous communication¹ a method was outlined for investigating the "state of vitamin-C nutrition" of the human subject. The method depends on measurements of the amount of vitamin C excreted in the urine, as determined by a simple chemical titration. Tests were carried out on scorbutic, undernourished and normal subjects, and it was shown that a low urinary output of vitamin C, together with a low response after a test dose, went parallel with the history of vitamin-C underfeeding. In discussing the quantitative aspects of these tests, it was concluded:—

Thus while it seems true that a presumption may fairly be raised that an infant is below the "vitamin standard" if it excretes less than, say, 1 mg. of vitamin C per day, we think a confirmatory test to determine the degree of saturation by the "test dose" method is always necessary; and for this purpose a routine dose of, say, 100 mg. may be suggested provisionally as suitable for an infant at the age of weaning. For an adult of average weight a dose of about 600 mg. seems suitable, and for children pro rata according to the body-weight. The response will vary according to the "state of saturation" of the subject, depending on the amount of vitamin C in his past diet. If the test dose causes no appreciable response—indicating a low degree of saturation—further information may be obtained by giving a second dose the next day, in order to distinguish between severe and

(Continued from previous column)

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† Sod. citrate, 2 per cent. Sod. chloride, 0.29 per cent. Brilliant cresyl blue, 0.3 per cent.

more moderate degrees of vitamin deprivation. An individual suffering from a more advanced condition of avitaminosis will require the administration of a number of such doses before a state of stable saturation is finally brought about, while with lesser degrees of deficiency saturation is more readily brought about. Details of these more quantitative aspects of the test we propose to elaborate in a later paper.

During the past year tests have been continued to obtain fuller data on the points raised in this last paragraph, and we are now in a position to formulate our results and recommendations in a more standardised quantitative form.

It deserves to be stressed at the outset that the test does not set out to measure an "all or nothing" effect—that is, it does not entitle one to say that a person is either "saturated" or else "unsaturated"—rather it measures a *degree* of response or saturation, which in practice is found to be closely graded in proportion to the past dietary intake of the vitamin. It might perhaps have been imagined that variations between individual subjects would be so great as to affect the delicacy of the method; in actual experience, however, we have been encouraged to find how close is the agreement in response as between duplicate subjects receiving the same treatment. Our present results confirm the conclusion that a suitable test dose is of the order of 600 mg. for an adult—or, for greater precision, we would suggest fixing it at a standard level of 700 mg. of ascorbic acid per day per 10 st. of body-weight. Results on children appear to come well into line with those on adults, if calculated on a body-weight basis.

During the course of the work we have also taken the opportunity to examine the question of the specificity of the titration method as a measure of the vitamin C in the urine. Various other technical points of procedure have also come up for review.

SPECIFICITY OF METHOD

The question as to whether the method used is specific for vitamin C, or whether it may also measure traces of other substances present in urine—thio-sulphate² or possibly ergothionine²—is often raised. We believe, however, that in the present connexion this is of academic rather than of practical interest; for in practice the titre falls as vitamin C is excluded from the diet and when the vitamin is restored to the diet it rises to a given predictable figure dependent on the amount of vitamin fed during the period in question. In other words the method is adequate for the purpose for which it is recommended, namely, as a simple and rapid method suitable for clinical investigations.

We thought it of interest, nevertheless, to carry out some measurements to determine the amounts of the "trace" substances present in urine which may theoretically reduce the dye, although they do so more slowly than vitamin C. For this purpose three methods have been used: (1) Eekelen's mercuric acetate method,² and (2) and (3) two new methods devised in the Nutritional Laboratory at Cambridge. The latter two methods depend, respectively, on the peculiarly rapid destruction of vitamin C on aeration in presence of a catalyst,⁶ and on the very rapid rate of decolorisation of the dyestuff by ascorbic acid—e.g., under suitable conditions ascorbic acid causes the reduction of about 50 per cent. of its stoichiometrical equivalent of the dye within about 4 seconds, whereas the corresponding figures for thio-sulphate, &c., are very small. The details of these methods will be published separately, but it is sufficient to say for the moment that in our experience the "non-specific" reduction titre due to substances other than vitamin C (as measured by the Eekelen method) does not normally rise above an equivalent of about 3-6 mg.

per day, out of the total of 20 mg. for the average "vitamin-C titre" of a "normal" subject kept on moderately low vitamin-C intake (or about 40 mg. for a more liberal intake, or, say, 200 mg. for the titre after a test dose, or 10 mg. for a subject receiving a diet so low in vitamin C as to be approaching the border line of adequacy).^{*} For illustrative results see Table I.

TABLE I

Vitamin-C titration values, corrected and uncorrected

A.—Uncorrected titration value.
B.—Corrected titration value according to Eekelen's method.

Subject.	(A) mg. per day.	(B) mg. per day.
S. N. R.	18	12
G. G. G.	11	7
S. A. C.	10	7
A. W. D.	7	5

The remaining figures cited throughout the body of the paper accordingly refer to the results obtained by the simplified method already described—i.e., titration against 2:6-dichlorophenolindophenol in acid solution to an end-point reached within two minutes. The values so obtained are expressed in terms of milligrammes of ascorbic acid.

Experimental Findings

THE RESPONSE AFTER A TEST DOSE IS GRADED IN PROPORTION TO THE "RESTING LEVEL"

Results to be cited below show how the day-to-day excretion—the "resting level"—depends on the past intake. Some preliminary values given in Table II. illustrate how this resting level in turn

TABLE II

Relation between resting level and response to a given test dose

(C)—Resting level. Mg. of ascorbic acid excreted daily, before test dose.

(D)—Response after test dose. Mg. of ascorbic acid excreted in 24 hours after administration of 600 mg. of ascorbic acid.

Subject.	(C)	(D)
A. W.	33	161
L. J. H.	17	122
A. W. D.	15	50
S. N. R.	14	35
G. G. G.	8	17

decides the magnitude of the response after a test dose. Above a certain critical resting level (about 15 mg. under the conditions of Table II.) the response rises sharply.

It might be argued that since the response to a test dose is so clearly related to the resting level, the latter alone might be used as an index of the state of vitamin-C nutrition. The advantage of the test dose technique, however, is that it magnifies the relatively small differences seen on the scale of the "resting level," and, more especially when the latter is subnormal, or in the "borderline" region of about 10-15 mg., it enables a more sharply defined decision to be reached.

It should be clearly understood, however, that the term "resting level" here used refers to a *steady state of equilibrium*, such as is brought about when a regular amount of vitamin C has been taken for some time past, the vitamin being then excreted at constant rate. Misleading conclusions might otherwise be drawn. For example, if a large test dose has recently been given, a condition of relative saturation may be produced tem-

* There is no evidence that the rise in vitamin C in the urine, caused by large amounts taken per os, is accompanied by any increase in the "non-specific" reduction value. Indeed, the presence of large amounts of vitamin C itself in the urine under these conditions has been proved biologically by direct feeding tests.

porarily, and so the effect of a further test dose will then be disproportionately high.

NEED FOR REPEATED TEST DOSE WHEN "RESTING LEVEL" IS LOW

To obtain a better indication of the responses of subjects with low vitamin-C "reserves," say with resting level below 15 mg. (who show little peak after a single test dose of 600 mg.), it is helpful to repeat the test dose on one or more further days. Under such circumstances subjects who have been longer deprived of vitamin C are found to take longer to reach a given state of "saturation" than do those in a less advanced condition of hypovitaminosis. Also we have found it an advantage to give a somewhat higher test dose than that employed in these preliminary trials. Further data illustrative of these points are given in Table III. Continued

TABLE III

Responses of subjects with moderately low "reserves"

Subject.	Resting level.	Response after test dose of 600 mg. per day.		
		1st day.	2nd day.	3rd day.
S. N. R. ..	18	16	109	—
G. G. G. ..	11	11	9	—
S. A. C. ..	10	10	10	75
A. W. D. ..	(7)	(19)*	(97)*	—

* This subject, aged 21 and weighing 8 st., was peculiar in giving abnormally high responses to test doses both in this and in subsequent tests (cf. Table V.).

observations (see later Tables and Figures) have indicated that a suitable magnitude for the test dose is, as stated in the introduction, 700 mg. per 10 st. body-weight.

QUANTITATIVE DATA: FEEDING EXPERIMENTS ON ADULTS

A series of experiments has been carried out to measure the effects of varied known intakes of vitamin C upon the urinary data. Two examples may be chosen to illustrate the results. In the experiment summarised in Fig. 1, subjects with

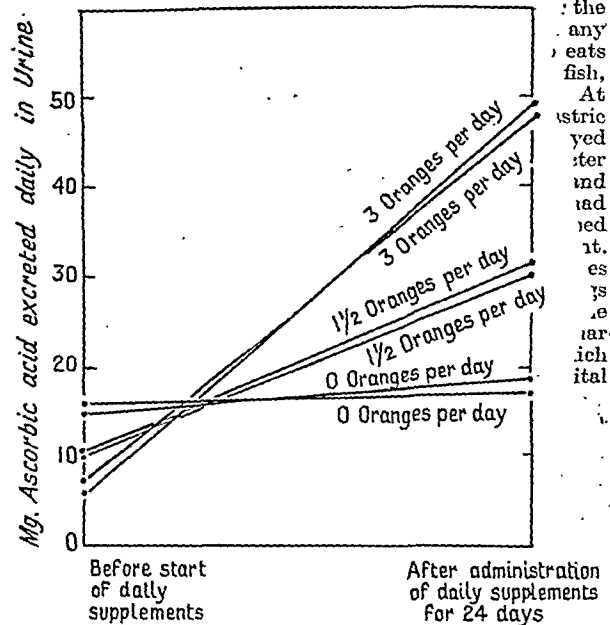


FIG. 1.—Effect of graded doses of orange juice on the day-to-day excretion of vitamin C in the urine. (The orange juice was titrated daily to determine its vitamin C. Average value, approximately: 90 mg. ascorbic acid for 3 oranges: 45 mg. ascorbic acid for 1½ oranges.)

varying subnormal "reserves" were first submitted to a test dose, and then given daily graded doses of vitamin C (as supplements of orange juice) for several weeks. The experiment was planned so that those subjects with initial low reserves received the larger doses while those with initial higher reserves received the lower. At the end of the period it could be shown that the treatment had had the expected effect, for the order of the "reserves" had become reversed in a striking manner; those who were originally low and had received the larger doses of vitamin C were now highest, and vice versa (Fig. 1). The day-to-day totals are given in Table IV., from which it will be seen also that at the end of the

TABLE IV.—EFFECTS OF GRADED LEVELS OF VITAMIN-C DOSAGE ON URINARY EXCRETION

I.—Vitamin-C supplement in diet.

II.—Daily output in urine.

Date in 1935.	L. J. H.		M. S.		M. A. A.		S. A. C.		G. G. G.		A. W. D.		Comments.
	I. mg.	II. mg.	I. mg.	II. mg.	I. mg.	II. mg.	I. mg.	II. mg.	I. mg.	II. mg.	I. mg.	II. mg.	
May 17	..	11.7	..	16.0	..	12.0	..	5.1	..	6.4	..	5.2	Pre-experimental period.†
" 20	..	9.2	..	12.6	..	9.7	..	7.7	..	6.0	..	2.9	
" 21	..	9.1	..	10.5	..	7.4	..	6.0	..	6.6	..	7.0	
" 22	..	6.8	..	..	..	6.6	..	8.2	..	7.0	..	3.9	
" 27	..	5.2	..	14.2	..	9.3	..	6.5	..	7.0	..	3.5	
" 28	84.0	17.5	630	107.6	700	10.6	700	25.4	700	12.1	560	9.6	Test dose (700 mg. per 10 st. body-weight).
" 29	84.0	145.0	0	60.9	700	79.7	700	116.7	700	5.1	560	101.0	
" 30	84.0	291.2	0	22.5	700	263.4	700	80.0	700	26.5	560	59.4	
" 31	..	50.0	..	..	..	45.8	..	70.4	..	13.9	..	6.6	
June 3	..	15.4	..	10.4	..	15.3	..	13.9	..	9.8	..	8.5	
" 4	..	15.0	..	15.2	..	18.9	..	14.1	..	10.7	..	8.1	Daily supplements (given as orange juice).
" 5	..	16.1	..	13.9	..	10.7	..	10.6	..	7.7	..	6.7	
" 18	0	11.6	0	..	45	10.4	45	10.0	90	6.6	90	9.0	
" 19	0	16.4	0	..	45	11.5	45	8.6	90	11.1	90	6.4	
" 27	0	11.1	0	50.6	45	12.1	45	24.7	90	32.4	90	50.6	
July 4	0	13.1	0	36.0	45	12.1	45	21.6	90	20.9	90	34.0	Orange juice discontinued. Test dose administered.
" 5	0	..	0	38.2	45	40.8	45	30.2	90	25.0	90	55.9	
" 8	0	10.3	0	19.0	45	26.3	45	31.6	90	33.2	90	52.4	
" 9	0	17.1	0	..	45	..	45	..	90	..	90	..	
" 11	0	17.1	0	..	45	..	45	..	90	..	90	..	
" 12	..	17.5	..	..	..	31.8	..	37.1	90	53.6	90	50.3	
" 16	84.0	109.5	630	95.8	700	120.1	700	30.6	700	48.2	560	49.8	
" 17	..	35.0	..	33.2	..	33.9	..	36.1	700	128.3	560	130.4	

* Large amount of strawberries eaten.

† During the pre-experimental period (and until June 3rd) precautions were not taken to protect the urine from the action of light; the values shown accordingly tend to be under-estimates (vide supra).

diet

more indeterminate the effects of the test doses were now aversely graded in order of the treatment given—of such reverse of the original order.

bring saturation. EXPERIMENTS WITH MINIMAL DOSES OF VITAMIN C these experiment just recorded shows that the elaboration of approximately $1\frac{1}{2}$ oranges a day (more

purately 45 mg. of ascorbic acid daily) to a diet otherwise containing little vitamin C was sufficient per raise the daily excretion to the fairly high level of about 32 mg. per day—that is, about half as high again as a standard "average" value of about

0 mg. per day which we find characteristic for test of the normal subjects in this country whom offe have examined (excluding liberal fruit eaters). per was therefore of interest to determine the amount rat vitamin C needed to raise the vitamin-C excretion wo a smaller extent and bring it near the "standard" level. In the experiment recorded in Fig. 2 a group of five subjects with originally subnormal reserves (markedly so in the case of three, S. A. C., G. G. G., A. W. D., whose diets were almost devoid of fruit and vegetables) were continued on their "basal diets," which were still arranged to contain the same meagre allowances of vegetables and fruit, and given a supplement of approximately $\frac{1}{2}$ orange daily—viz., 15 mg. of ascorbic acid, accurately determined by titration. As will be seen (Fig. 2) the result was that after a few weeks all the subjects had reached the same level of equilibrium, and were now excreting about 15 mg. daily. This experiment illustrates very strikingly the agreement in urinary response between duplicate subjects receiving the same treatment for a sufficient length of time. The same agreement is apparent also in the effects of the test doses given at the end of the experiment (see Table V.).

TABLE V

Administration of minimal daily supplement of vitamin C : effect on urinary excretion and response to test dose

	Mg. of ascorbic acid (uncor.) excreted per day.				
	L. J. H. (12 st.)	M. A. A. (10 st.)	S. A. C. (10 st.)	G. G. G. (10 st.)	A. W. D. (8 st.)
Daily excretion of vitamin C before experiment (Sept. 30th-Oct. 2nd)	11.8	12.7	8.8	8.3	8.0
Daily excretion of vitamin C after experiment (Nov. 11th to 18th): 15 mg. of ascorbic acid added to diet from Oct. 5th onward in form of orange juice	16.2	15.0	15.5	15.7	15.8
Effect of test dose (700 mg. per 10-st. body-weight, Nov. 19th)	55.5	42.5	42.7	41.1	81.8*

* Subject who shows abnormally high response (cf. Table III.).

CORRELATION BETWEEN URINARY DATA AND MINIMAL VITAMIN-C NEEDS OF MAN

Göthlin and other clinical observers have attempted to determine the smallest amount of vitamin C needed to prevent the earliest prescorbutic symptoms. One method depends on the fact that with a lowered intake of vitamin C the capillary resistance may become subnormal, and then the smallest dose of vitamin C may be determined which is needed to restore the capillary resistance again to the normal figure. Göthlin has carried out such surveys on large numbers of individuals; on the basis of this and of other methods of calculation a fair measure agreement has been reached by several indepen-

dent observers and the conclusion arrived at that an adult needs about 25 mg. of ascorbic acid daily to prevent the slightest objectively determined prescorbutic ill-effects.³ Now in the experiment shown in Fig. 2 a basal diet containing only mediocre amounts of vitamin C was supplemented with the small allowance of 15 mg. of ascorbic acid ($\frac{1}{2}$ orange) daily; in the case of two subjects at least (G. G. G., S. A. C.) the basal diet contained no fresh fruit and

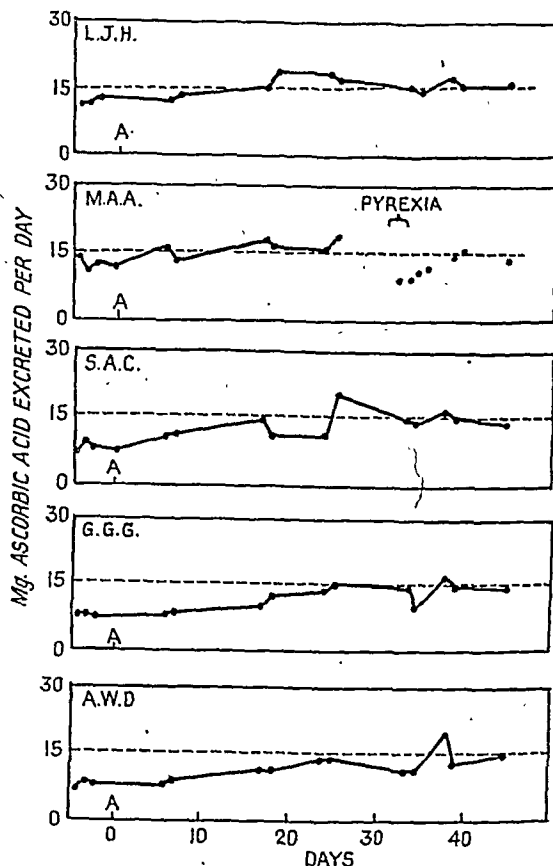


FIG. 2.—Effect of addition to diet of minimal daily dose of vitamin C (15 mg. = $\frac{1}{2}$ orange, approx.) in raising the daily excretion. At the start, the S. A. C., G. G. G. and A. W. I. their diet being almost free daily excretion being only 7 to 8 mg. per day. At "A" the small daily addition of orange juice was made to the diet. The result was that in the course of three to four weeks all the subjects had reached the same steady equilibrium, and were now excreting at the rate of 15 mg. per day. For results of test dose at end of experiment, compare Table V. The effect of pyrexia is seen in the curve for M. A. A.

no vegetables, except for small provisions of cooked potato. Few would hold that such a diet contained any large excess over the reputed optimum daily requirements of the vitamin. Now it was clearly shown that such a regimen results in equilibrium being attained with the daily excretion of a titre of 15 mg. per day (i.e., uncorrected, expressed as ascorbic acid).† On this basis, then, we may argue that if a subject excretes less than, say, 10 mg. per day, uncorrected titre—to take a still more conservative estimate—it seems legitimate to raise a presumption that his diet has been unduly low in vitamin C, and probably has contained less than the reputed optimum allowance of vitamin C (ca 25 mg.).

† At these very low levels of excretion, as already indicated, a significant portion of the titre may in reality be due to the residue of reducing substances other than vitamin C, but the validity of the experimental findings is not thereby affected.

Experiments are at present in progress on adults in which diets, *strictly* deficient in vitamin C, are being supplemented with no more than the reputed bare minimal dose of vitamin C and the corresponding urinary data measured. These should confirm the previous conclusion under more meticulously precise experimental conditions.

The next need is to confirm these relations between the "reputed minimum" dose and the urinary excretion by direct clinical observation in mild scurvy. The urinary excretion should be examined at a stage when, following the continuous administration of moderate doses of vitamin C, equilibrium has been attained and the diminished capillary resistance, or other symptoms, have been almost but not quite brought to an end.

DATA FOR NORMAL INFANTS

Calculating on a body-weight basis, and taking the "minimal" and "normal" excretion values for a man of 10 st. as about 10 and 20 mg. per day respectively, the corresponding figures for an infant of about 1 st. may be calculated as about 1 mg. and 2 mg. per day respectively. These figures are borne out by the data given in Table VI. These values

TABLE VI

Vitamin-C excretion of normal infants and response to test dose

Initials.	Age. Y. M.	Mg. of ascorbic acid excreted in 24 hours.	
		Before test dose.	After test dose of 100 mg. of ascorbic acid.
B. J. ..	1 0	0.5	1.3 +
C. R. ..	1 10	1.1	1.5
B. A. ..	1 2	1.7	3.7
S. ...	1 4	2.0	2.0 + +
W. D. ..	1 0	2.6	12.4 + +
R. K. ..	1 2	2.8	41.0 + +
B. P. ..	1 6	5.5	28.0
G. M. ..	1 7	10.7	50.0

+ Indicates that true value was higher than that shown: some urine being lost. Y.M. = years and months.

relate to infants receiving in addition to their main diet the daily dose of a commercial concentrated orange juice "as recommended by the makers" (see below).

It will be seen that in nearly all cases the excretion was not lower than the expected minimum level of 1-2 mg. per day; moreover the effect of test doses was well graded, in proportion to the resting levels. These findings with normal infants may be contrasted with the negligible excretion found for scorbutic infants¹ and their failure to respond to test doses¹; after cure they excreted at a normal rate and gave good responses.

A very considerable variation is seen in the resting levels of these normal infants. This is not altogether surprising in view of the circumstances of the test. The infants chosen were a group attending a welfare centre at West Ham. The dosing was not directly supervised by the authorities but for three weeks before the test the mothers were instructed to give in addition to the usual diet a daily supplement of orange juice. The recommended dose, following the makers' instructions, was $\frac{1}{2}$ oz. per day, which we find by titration to be equivalent to 8 mg. of ascorbic acid per day. Those babies over a year old were receiving, in addition, vegetables and fruit in their "basal diet." A number of factors might be responsible for the variations seen: (a) It is difficult to rely on mothers under hard conditions in poor homes adhering strictly to uniform doses. (b) It is conceivable that there may have been destruction of the vitamin in the urine in some

cases—e.g., it is unknown whether in alkaline or the destruction may occur even in the bladder itself. (c) The requirements of infants may differ more widely from those of adults (cf. the uniform behaviour of adult fish. At Fig. 2), or some of the infants may have not yet reached a condition of equilibrium under the increased dietary regimen. Tests to be carried out in institutions under strictly controllable conditions will eliminate factors (a) and (b) and enable a decision to be reached as to the possibility (c).

Another series of tests was carried out on babies attending a centre at Leytonstone (Table VII). The general conclusion reached was again the same, namely, that on adequate doses of vitamin C the urinary excretion does not fall below the expected level of about 1-2 mg. per day per stone of body-weight. Although some "scatter" was again apparent in the values, there was a definite indication of increased excretion by those babies receiving the larger allowances of vitamin C (diets "B" and "D" in Table VII.).

TABLE VII

No. in order of age.	Age. Y. M.	Initials.	Diet "A" = $\frac{1}{2}$ orange daily.	Diet "B" =1 orange daily.	Diet "D" =1 orange + 1 banana daily.
1	0 7	K. M.	0.91	..	..
2	0 9	P. R.	..	8.27	..
3	0 9 $\frac{1}{2}$	S. P.	1.05	..	..
4	0 9 $\frac{1}{2}$	L. S.	1.31 +	..	..
5	0 9 $\frac{1}{2}$	D. D.	1.32 + +	..	..
6	0 10	T. J.	1.73 + +	..	..
7	0 10 $\frac{1}{2}$	C. P.	6.73	..	..
8	0 10 $\frac{1}{2}$	C. J.	10.02 +	..	..
9	0 11 $\frac{1}{2}$	G. P.	1.64 +	..	..
10	1 1	B. M.	..	..	12.3 + + +
11	1 2	K. P.	1.14	..	..
12	1 5	A. J.	..	25.4	..
13	1 9	M. C.	..	57.0	..
14	1 10	M. F.	..	(1.63 +)	..
15	2 2	B. J.	..	2.87	..
16	2 4	J. S.	3.27 +	..	..
17	2 5	Y. W.	3.65 +	..	..
18	2 9	N. I.	..	2.08	..

* Diet "C" = 6 teaspoonfuls orange juice daily.

+ Diet "E" = tomato.

+ Indicates loss of some urine: values should be higher than indicated.

It is generally supposed that the vitamin-C requirements of an infant or child, calculated per unit of body-weight, are greater than those of an adult, since the organism may be presumed to have a greater call on all nutritive material during the period of growth. The above preliminary results may be taken as supporting this contention, to judge from the relatively large daily doses of vitamin C apparently needed to produce a given degree of "saturation."

THE QUESTION OF "LATENT SCURVY"

Earlier results with older children from institutions¹ indicate similarly that those who were known to have received a moderate daily allowance of vitamin C in the form of fruit (e.g., $\frac{1}{2}$ orange and/or $\frac{1}{2}$ apple a day) all fall well into their expected place—i.e., excreting not less than approximately 2 mg. per stone of body-weight. On the other hand, tests carried out at random on specimens of the infant and child population in several centres in this country have shown that lower reserves are not at all uncommon—i.e., in children whose diet has not been specially supervised by any authority. This points to the suggestion that large numbers of infants receive less than the optimum dosage of orange juice recommended by the clinicians. It may also be taken as supporting evidence in favour of the theory which has more than once been propounded that latent scurvy is not a rare condition. When the mothers are questioned about the diet

more children one not infrequently receives the advice that although the doctor (or the welfare bureau) recommended orange juice, "the baby didn't seem to like it" or "it couldn't be afforded" or it was "not considered necessary."

VITAMIN-C EXCRETION IN PYREXIA

It has already been reported by Schroeder and by others that during fever vitamin C is used up more rapidly than it is normally. We have confirmed this finding, e.g., in the observations shown in Fig. 2, on a subject suffering from mild coryzal fever of short duration. The excretion of vitamin C promptly fell within 24 hours of the onset of fever from 19 mg. to 0.7 mg. per day, and remained at a depressed level for a week or more afterwards although the daily dose of vitamin C was continued as before. A larger dose was needed to restore his "reserves" to their original value.

Such a result is important as indicating that the vitamin (in common with certain other metabolites) is utilised at an increased rate in fever. It confirms the need for the provision of a specially ample allowance of the vitamin during convalescence.

Technique of Method

Collection of specimens: need for storage in dark bottles.—The same procedure was adopted for collecting urine as that previously described. The urines were collected during half-day periods with the addition of 5 per cent. of acetic acid and then titrated immediately. In the presence of the acid the loss which occurs up to a period of about 12–15 hours is generally of little practical significance—viz., about 20–30 per cent.—provided the urine is kept in dark bottles. In the light however we have found that the vitamin may be fairly rapidly destroyed, as is shown by the following comparison between acidified urines kept in colourless and in dark-coloured bottles (Tables VIII. and IX.). By about 24 hours the loss may reach

TABLE VIII

Loss of vitamin C in acidified urine after standing overnight (16 hours)

No. of specimen.	Titration value in mg. per c.cm.		
	Initial value.	Value after 16 hours in dark bottle.	Value after 16 hours in light bottle.
1	0.106	0.093	0.045
2	0.080	0.065	0.031
3	0.050	0.041	0.020
4	0.014	0.012	0.002
5	0.020	0.017	0.008
6	0.035	0.019	0.014

TABLE IX

Loss of vitamin C in acidified urine after standing for 24 hours

No. of specimen.	Titration value in mg. per c.cm.		
	Initial value.	Value after 24 hours in dark bottle.	Value after 24 hours in light bottle.
7	0.08	0.05	0.004
8	0.10	0.03	0.005
9	0.10	0.03	0.003
10	0.09	0.04	0.004
11	0.06	0.03	0.003
12	0.04	0.02	0.002

serious proportions. When the urine has to be kept for such long periods, however, a procedure is available, involving treatment with H₂S, by which the ascorbic acid may be preserved or regenerated.⁵

Method of titration.—Only one point calls for special mention—namely, the need for the titration to be carried out rapidly (within two minutes). This has already been indicated but cannot be over-emphasised. The dye solution should be re-standardised frequently and the titration carried out in acid solution. (In the previous paper the strength of stock dye solution, of which 0.05 c.cm. is approximately equivalent to 0.025 mg. of ascorbic acid, was inadvertently given as about 0.05 instead of about 0.10 per cent.)

CONCLUSIONS ON TECHNIQUE

It is stressed that the total daily excretion of the vitamin in the urine should be measured and not merely its concentration. The urine should be collected in dark bottles, as light accelerates the inactivation of the vitamin. The titrations should be carried out as soon as possible after the urine is passed, but it may be kept with comparatively little loss for about 12–15 hours with the addition of 5 per cent. of acetic acid.

For the test dose, about 700 mg. of ascorbic acid should be given per 10 st. of body-weight. If a small response results, this dose should be repeated on one or more further days in order to distinguish between the milder degrees of deprivation and more severe hypo- or a-vitaminosis.

The rapid method of analysis described may estimate small traces of other substances present in urine as well as vitamin C, but this in no way affects its utility as a convenient clinical method for the purposes indicated, as is shown by the fact that the urinary response is found to be closely graded in proportion to the intake of the vitamin and that different subjects show close agreement in response when given the same vitamin intake. When however results of great precision are needed it is possible to refine the specificity of the technique and several alternative methods are indicated.

Summary of Results

1. Studies have been continued of the application of the method previously described and detailed quantitative data collected. The technique of the method and its specificity are discussed (see preceding paragraph).

2. Various graded doses of vitamin C were taken daily by adult subjects over long periods, and it was shown that their urinary excretion of the vitamin reached levels graded in proportion to their intake.

3. The effect of a test dose was similarly investigated and shown to be graded in proportion to their dietary intake, and so also to their "resting levels" before the test dose.

4. Surprisingly little variation was found between individual subjects, the same daily dose of vitamin given to a number of subjects producing after a time an almost identical rate of excretion.

5. It is confirmed, however, that in fever the output drops and the vitamin appears to be "wasted," and an additional dosage is needed to restore the subject to his original level. This result indicates the need for provision of extra vitamin C during convalescence.

6. In normal adult subjects of about 10 st. the addition to a diet fairly low in vitamin C of 3 oranges per day (90 mg. of ascorbic acid) leads to an excretion of about 50 mg., of 1½ oranges (45 mg.) to an excretion of about 30 mg., and ½ orange (15 mg.) to an excretion of about 15 mg. On the last-mentioned regimen the response to a single test dose of 700 mg. of ascorbic acid is of the order of 40–50 mg.

7. The reputed minimum dose of ascorbic acid needed to prevent the earliest symptoms of hypo-vitaminosis C in adult subjects is said to be about 25 mg. per day. In view of the above results therefore a presumption may be raised that the diet has been unduly low in vitamin C whenever the daily excretion falls below a titration value (uncorrected) of about 10–15 mg. per day (i.e., per 10 st. body-weight) or the standard test dose of 700 mg. fails to give a response on the second day. Direct comparisons have still to be made between the mildest clinical symptoms of vitamin-C deficiency and the corresponding levels of urinary excretion.

In our experience, in this country the average daily excretion of normal adult subjects receiving small

liberal) allowances of fruit (or other source of min C) is about 20 mg. per day. (though the needs of infants and children for min C seem to be relatively greater than those of its, the same figures appear to apply approximately their "normal daily excretion"—i.e., when related to a body-weight basis. Thus children about one year receiving the "recommended" ly dose of orange juice excrete not less than 1 mg. of ascorbic acid per day. Their response to est dose, as with adults, is also graded in proportion the "resting level."

Judged by the urinary excretion figures, sub-minimum intakes of the vitamin are not uncommon.

We wish to express our indebtedness to the medical icer of health for West Ham for permission to publish e results obtained on infants attending the local welfare ntre, and to Dr. M. Gilchrist for the great trouble she ok in obtaining the material for the observations at yntonstone. Messrs. Hoffmann-La Roche generously rovided the ascorbic acid used in these tests.

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A CASE OF ADULT SCURVY

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IN 1933 Harris, Ray, and Ward¹ introduced a titration method for estimating the amount of ascorbic acid in urine. This year Harris and Ray reported further experiences,² showing that the test was of value as an aid in the diagnosis of infantile scurvy, their patients having a low ascorbic acid output and failing to exhibit a peak rise after a large dose of the acid, in contrast to normal controls. Observations on adults showed that a low urinary output of ascorbic acid and a low excretory response to test doses went parallel to a history of vitamin-C underfeeding, and to a state of vitamin-C subnutrition as evidenced by a lowered capillary resistance. The following case is interesting because adult scurvy is now a rare disease and because it was investigated on the lines suggested by Harris and Ray.

CASE REPORT

A woman, aged 53, was admitted to the Hammersmith Hospital on Sept. 28th, 1935. She complained of pains in various parts of her body, a rash on her legs and weakness. She was depressed, irritable, and negativistic, so that a complete history was difficult to elicit, and investigations had to be limited. She discharged herself 12 days after her admission.

Prior to 1925 her previous history contained nothing of significance. Her family history was irrelevant. She had been married twice but had had no children. She objected strongly to all questions of a personal nature. She had an early menopause at the age of 43, after which she developed dyspepsia consisting of flatulence, epigastric pain immediately related to food, nausea, and occasional vomiting. She still suffers from these symptoms, and on

account of them she has held to a fairly strict diet over the last ten years. She avoids green vegetables, fruit of any kind, and potatoes, and she boils all her milk; she eats very little meat; her diet consists practically of fish, eggs, custards, milk puddings, bread and butter. At Christmas time in 1934 she had a severe attack of epigastric pain and vomiting and went to bed, where she stayed for four months during which time her diet was stricter than ever. In May this year she began to improve and left her bed. In the middle of August, however, she had a sudden severe pain in the right thigh, and was helped back to bed where she was given aspirin and a liniment. Her landlady, while applying the liniment, noticed bruises on the right thigh, and later a rash appeared on the legs and abdomen, and small hæmorrhages were seen under the nails. The shoulders, knees, left forearm, and right thenar eminence became the seat of painful blue swellings which were exquisitely tender. She was admitted to hospital with the diagnosis of gastritis, purpura, and neuritis.

Examination revealed a pale thin woman of 53, weighing 5 st. 12 lb. She was irritable and depressed. There were extensive petechiæ, especially under the nails and on the legs, and tender ecchymoses in the right thenar eminence and in the right thigh posteriorly. Both knees and both shoulders were tender on pressure and painful on movement, but the swellings had subsided. There was no fluid in the joints and movement appeared to be restricted only by pain. There were no hæmorrhages in the optic fundi nor in the conjunctivæ; there was no blood in the urine nor in the stools; there had been no epistaxis, hæmatemesis, nor hæmoptysis. Her teeth had been removed with the exception of one lower molar which was loose in its socket, the surrounding gum being retracted, hæmorrhagic, and slightly ulcerated; the rest of the gums were pale and hard. The fauces and tonsils were normal, the tongue furred, large, and flabby. No abnormality was detected in the ears.

The heart was not enlarged, there were no murmurs, the rhythm was regular, there was no signs of congestion, and the electrocardiogram was normal. The arteries were not unduly thick for her age and her blood pressure was 150/90. The lungs showed no abnormality, and the costal cartilages and costochondral junctions were normal. The lower border of the liver was 3 in. below the right costal margin. It was somewhat tender on palpation, and the edge was smooth. The spleen could not be felt, and no other intra-abdominal abnormality was detected. The central and peripheral nervous systems appeared normal in all respects; there was no impairment of sensation and apart from the ecchymoses there was no hyperæsthesia; the pupils, tendon reflexes, and cranial nerves were normal.

The red blood-cells numbered 3,200,000 per c.mm., the hæmoglobin measured 58 per cent. by the Haldane method, and the colour-index was 0.9. There were 2.5 per cent. reticulocytes. The mean red cell volume was 80 cubic microns. The platelets amounted to 340,000 per c.mm. The leucocyte count was 5000 per c.mm., of which 65 per cent. were polymorphonuclear and 32 per cent. were lymphocytes. The blood coagulation time was 2 minutes at 37° C., and the bleeding time was 4 min. 15 secs. The erythrocyte sedimentation-rate was 54 mm. of plasma at the end of one hour with the Westergren technique. The blood fragility test showed that hæmolysis commenced with 0.44 per cent. of sodium chloride, and was complete with 0.28 per cent. sodium chloride. The blood van den Bergh test was directly and indirectly negative. The carbon dioxide-combining power of the blood was 46 c.cm. of carbon dioxide (normal, 50-70 c.cm.).

The urine was alkaline on admission with a specific gravity of 1002. It contained a trace of albumin, but no blood or sugar. Rothera's test for acetone was negative. Microscopically there were numerous squamous, epithelial, and granular casts, and a few red blood-cells were seen.

Radiography of the skeleton showed no joint changes, no alterations of structure or density of bone, and no evidence of subperiosteal hæmorrhages. While the patient was in hospital her temperature varied between 97° and 100° F., but was higher than 99° on only one occasion. Her pulse-rate averaged 90.

¹ Harris, L. J., Ray, S. N., and Ward, A.: Biochem. Jour., 1933, xxvii., 2011.

² Harris and Ray: THE LANCET, 1935, i., 71.

INVESTIGATION

The excretion of ascorbic acid in the urine was then investigated and compared with that of a normal control patient of the same weight. The ascorbic acid was estimated in the freshly voided specimens of urine by titration with 0.1 per cent. dichlorophenolindophenol according to the procedure outlined by Harris and Ray.³ Urine specimens voided during the night were preserved with 10 per cent. of glacial acetic acid. The outputs of vitamin for 24-hour periods before and after administration of a massive dose (600 mg.) of ascorbic acid were determined. A control case was used in which there was no history of vitamin deprivation. The findings were as follows:—

TWENTY-FOUR HOURS BEFORE VITAMIN ADMINISTRATION

Scorbutic.—1303 c.cm. of urine, no ascorbic acid found.

Control.—1442 c.cm. of urine, total ascorbic acid found 53 mg.

TWENTY-FOUR HOURS AFTER VITAMIN ADMINISTRATION

Scorbutic.—1681 c.cm. of urine, total ascorbic acid excreted approximately 1.7 mg.

Control.—1049 c.cm. of urine, total ascorbic acid excreted 231 mg.

It was considered that this result proved that the diagnosis of scurvy was correct. The patient was treated with 80 mg. of ascorbic acid in tablet form daily, while she was kept on a vitamin-C free diet. There were no further hæmorrhages, and the petechiæ and ecchymoses were fading when the patient discharged herself.

DISCUSSION

The case illustrates that even to-day, when the existence and importance of vitamins are common knowledge, scurvy still occurs in adults. In this instance a dyspeptic diet was the cause of the vitamin deficiency.

The case bears out the contentions of Harris and Ray that the ascorbic acid urinary excretion test is a valuable aid in the diagnosis of scurvy. The patient received over 1000 mg. of ascorbic acid and excreted only 1.7 mg., and that was after the test dose of 600 mg. A normal control, after a test dose of 600 mg. of ascorbic acid excreted 231 mg.

There can be little doubt that both children and adults store vitamin C in the tissues, for Harris and Ray have shown that the excretion of ascorbic acid continues at an even rate for many days after complete elimination of the vitamin from the diet, and there is no evidence that human beings can synthesise it. That 1000 mg. of ascorbic acid were almost completely retained in the body of this patient suggests that her stores were very low.

The anæmia of scurvy is of interest. It is generally recognised that vitamin C is necessary for blood formation, and that a definite reticulocyte response can be demonstrated in cases of scurvy with anæmia treated solely with vitamin C. The anæmia may be cured completely with this treatment alone if it is not associated with an iron or other deficiency. Hæmoglobin estimations indicate that the anæmia, when pure, is usually orthochromic,⁴ and the red cells are usually normocytic,⁴ as measured by the method of Price-Jones. In this case the anæmia was moderate, and appeared to be orthochromic and normocytic. It was not possible to estimate the reticulocyte response owing to the patient's objections. The bleeding time was prolonged and the blood-platelets were normal.

SUMMARY

A case of frank adult scurvy is reported. The cause of the condition was a long-continued dyspeptic

diet which was almost free from vitamin C. Examination of the urine showed that the patient was excreting no ascorbic acid by this route, whereas a control patient excreted 53 mg. in 24 hours. After an initial dose of 600 mg. of ascorbic acid by mouth the scorbutic patient excreted 1.7 mg., whereas the control excreted 231 mg. The patient received a further 80 mg. per day for a week, while she remained on a diet containing no vitamin C. During this time she excreted no more ascorbic acid. No further hæmorrhages occurred and the original petechiæ and ecchymoses were fading when the patient discharged herself from hospital.

The biochemical part of this investigation was carried out by Dr. E. J. King in the biochemical laboratory of the British Postgraduate Medical School, and to him my thanks are due. I also wish to thank Prof. F. R. Fraser for his help and interest in the case.

THE SIGNIFICANCE OF
LATERAL ABERRANT THYROIDS

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THE peculiar behaviour of misplaced thyroid tissue has been studied by many observers. It is now established that thyroid tissue occurring in regions remote from the neck and especially in bones represents metastasis from a malignant growth of the thyroid which may be actually a small undetected malignant adenoma (Joll,¹ Dunhill,² d'Abreu³). If however tissue of the thyroid type is found in the neck apart from the normal gland, the explanation is not so defined or simple. Such tissue may occur either above, below, or lateral to the gland proper. Extremely rarely the aberrant tissue may be found in the larynx.

There is no need here to describe the embryology of the thyroid; it is sufficient to note that the thyroid commences high up in the primitive pharynx as a median pouch between the second arch and the tuberculum impar and then descends relatively caudally; the ultimate bilobed shape of the gland depends upon a lateral attachment to the third arch on each side and glandular tissue runs along the artery of this arch and ultimately fuses with the epithelium of the fourth lateral pouch (Frazer⁴). Occasionally portions of gland continue to pass caudally and the existence of intrathoracic pieces of thyroid tissue is well known. Another site for ectopic thyroid tissue is at the back of the tongue in the region of the foramen cæcum. Anatomically, physiologically, and pathologically thyroid tissue in these two sites differs greatly from lateral aberrant thyroids (Billings and Paul⁵); the latter usually show malignant changes, the former rarely, if ever, do. Further, myxœdema may follow excision of superior and inferior masses (Grace and Weekes⁶), but it never follows removal of lateral thyroid tissue.

In contrast to the simple embryological explanation of superior and inferior thyroid tissue is the obscure origin of lateral aberrant thyroid tissue. Anatomists are unwilling to accept an origin from the fourth arch or the ultimo-branchial body; the more obvious explanation seems to be that as the blood-vessels in the neck, to which the thyroid is intimately attached, grow outwards they carry with them small portions of thyroid tissue (Frazer,⁴ Woollard⁷). The following case suggests that an origin from the fourth arch region is not impossible.

³ Harris and Ray: *Ibid.*, p. 462.

⁴ Parsons, L. G., and Smallwood, W. C.: *Arch. Dis. Childhood*, 1935, x., 327.

CASE 1. *Lateral aberrant thyroid occurring in a branchial cyst.*—A woman, aged 23, was admitted to the General Hospital, Birmingham, on August 14th, 1932, under the care of Mr. Rose, with a lump in the right side of the neck which had appeared five years previously and had remained the size of a marble until a recent enlargement had occurred. The general condition was excellent: a painless, cystic swelling $1\frac{1}{2}$ in. in diameter presented in the posterior triangle of the neck behind the lower third of the sternomastoid; there was no adherence to the skin and the lump was movable on the deeper structures. The preoperative diagnosis was "branchial cyst." Mr. Rose operated and exposed a cyst, the pedicle of which ran behind the great vessels of the neck up to the pharynx to which it was attached and from which it was dissected. During the removal several small hard swellings were felt in the cyst. Convalescence was uneventful and the patient on inquiry early this year (two years and six months after the removal) was well and completely free from recurrence.

The cyst is lined by ciliated columnar epithelium, part of which is arranged in complicated papillary



FIG. 1 (Case 1).—Thyroid tissue in a branchial cyst. ($\times 60$.)

to the pharynx. Branchial cysts are usually lined by squamous epithelium, but branchial fistulae are commonly lined by columnar ciliated epithelium. There is some evidence therefore from this case that certain lateral aberrant tissue may develop



FIG. 2 (Case 2).—Photograph showing the lump behind the right sternomastoid.



FIG. 3 (Same case).—The tumour.



FIG. 5.—Tumours removed in Case 3.

processes, the solid portions consist of poorly developed thyroid tissue in which some colloid is present (Fig. 1).

It will be seen from Fig. 1 that the tissue is papillomatous in type. The evidence against the tumour being solely a lateral aberrant thyroid showing cystic degeneration is the presence of ciliated epithelium and the fact that the cyst was attached

from tissue in the neighbourhood of the fourth pouch. It must be noted however that thyroglossal cysts are lined by squamous epithelium and may be columnar and ciliated (Joll⁵). It would therefore be foolish to exaggerate the significance of this case as indicating an origin from the fourth pouch.

It is now well recognised that these lateral aberrant thyroids are extremely dangerous as potential areas of malignant disease. Dunhill says: "These misplaced bits of tissue . . . foredoom the host to carcinoma from before the day of birth." Others, although regarding them with grave suspicion, are not quite so gloomy in their prognostications. In recording 4 cases, Dunhill² points out that 2 proved fatal from secondary malignant metastases. The malignant tendency is undoubtedly due to the extreme degree of papilloma-formation seen in the intracystic masses. In reporting 35 cases, Billings points out that 70 per cent. were papillary in type. Dunhill, discussing the papillary arrangement, emphasises its potential malignancy in thyroid tissue whether in normal or abnormal situations; it occurs in adolescent and toxic goitre and has been produced in brook trout; he goes on to suggest that stimulation, whether pathological or physiological, causes this architectural type because of the inherent properties of thyroid epithelium; he asks if papilliferous adenocarcinoma is due to stimulation of a part of the thyroid which is subsufficient through maldevelopment or malposition, or whether it is due

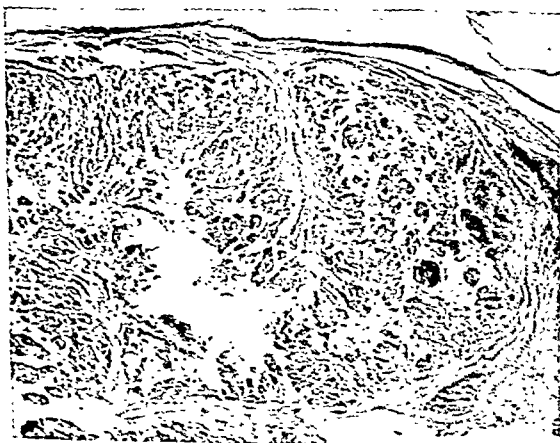


FIG. 4 (Same case).—Section showing malignant change. ($\times 8$.)

to abnormal stimulation. From puberty onwards for some 10-15 years the thyroid is subjected to an increasing strain. Dunhill points out that of 45 reported cases the condition was obvious in 25 before the age of thirty, and in 15 before the age of twenty; this suggests that the abnormally placed tissue responds to the acting stimuli by a cystic papillomatous hyperplasia. Of the 35 cases collected by Billings and Paul,⁵ 26 were in females and 6 in males, the sex-incidence not being reported in 3; the extra burden of menstruation, pregnancy, and lactation may account for the greater stress thrown upon the gland in the female.

Why the tendency to papilliferous formation should be more marked in lateral aberrant thyroids than in the superior and inferior median displacements remains unexplained. Whatever be the cause of the papillomatous change, the menace of carcinoma here,



FIG. 6 (Same case).—Section of tumour showing colloid vesicles and papillary structure. ($\times 45$.)

as in the breast, rectum, and tongue, is undoubted and all published series of lateral aberrant thyroids show that this complication occurs frequently although it may be delayed for many years, as in the following case.

CASE 2.—Mrs. A., aged 69, was admitted on March 7th, 1934, to the surgical unit at the Cardiff Royal Infirmary complaining of a lump situated behind the right sternomastoid muscle about $1\frac{1}{2}$ in. above the clavicle (Fig. 2). This was painless and had existed for over two years, with progressive increase in size; there was some dyspnoea and the patient had become more nervous before admission. There was no family history of goitre. On examination the patient was well developed but pale; the pulse was irregular and varied between 110-140 beats per minute; there was auricular fibrillation and the heart was enlarged. In the posterior triangle of the neck on the right side there was a hard large spherical mass 2 in. in diameter and above this a second nodule could be felt; both were movable. The thyroid appeared to be normal and moved on deglutition. At operation under general anaesthesia the swellings were removed without difficulty; the upper tumour had the characteristic bluish-black colour of lateral aberrant thyroid tissue. The larger lower mass was not so dark, and on pathological examination it was seen to have undergone malignant change into papilliferous carcinoma (Figs. 3 and 4). Convalescence was uneventful, but unfortunately efforts to trace the patient have been unsuccessful.

Such a case occurring late in life suggests that certain unexplained so-called branchiogenetic carcinomata may have their origin in misplaced thyroid tissue.

The fourth case of lateral thyroid tumour I have seen is characteristic of the earlier type; diagnosis is rarely made correctly, and although I had had the good fortune to study personally the case recorded

by Forty,⁹ I diagnosed the condition before operation as one of tuberculous adenitis.

CASE 3.—A man, aged 30, a patient in the surgical unit of the Welsh National School of Medicine, had had a swelling in the right side of the neck for five years; this had appeared after a tooth abscess and quinsies had occurred. On examination two swellings existed half-way down the right sternomastoid, one being partly in the anterior triangle and under the sternomastoid, the other being behind the muscle; they were soft in consistence and semifluctuant; there was no movement on deglutition, but the swellings were freely movable on the surrounding structures. As stated, the preoperative diagnosis was tuberculous glands. At operation (Feb. 5th 1934) through a curved incision two bluish-black tumours were exposed and a diagnosis of lateral aberrant thyroid tumour was made. Both tumours were well encapsulated and were easily removed, convalescence being uneventful. In view of the possible danger of malignancy, the patient's condition has been carefully followed; he remains well and free from clinical evidence of recurrence a year after operation.

Fig. 5 shows the two tumours: the upper really consists of two swellings; the multiplicity of these little tumours has been noted by Dunhill² and Billings and Paul.⁵ The lower tumour has been opened and shows small rounded masses projecting into cystic spaces. Fig. 6 is taken from a microscopical preparation from one of these masses, and shows well-filled colloid vesicles. The papillary structure is noteworthy and is an indication of the potential malignancy of the tumour.

CONCLUSION

The embryological explanation of laterally misplaced thyroid tissue remains uncertain. That the outgrowing blood-vessels carry the tissue with them is the modern view; origin from the fourth pouch or from the ultimobranchial body is unlikely, but is accepted by some authorities and is in some respects supported by Case 1 reported here. The pathological changes in these cases are very different from those of aberrant thyroid tissue found in a superior or inferior position; intracystic papilloma-formation is common and this often proceeds to malignant change. Symptoms of hypothyroidism after removal are unknown, and the cases are thus in contrast with those of superior aberrant thyroid where such symptoms are not uncommon. Clinically the condition is not usually diagnosed until operation. The most important diagnostic appearance is the bluish-black colour, and unless this fact be known the surgeon may be puzzled by the appearances and may regard the condition as a melanotic growth. If such tumours are seen careful and complete extirpation is essential because of the danger of their becoming malignant. If a correct preoperative diagnosis be made there is no justification for abstaining from immediate operation. The prognosis is doubtful and all cases must be carefully followed up. The best treatment for recurrence appears to be excision associated with radiotherapy.

I wish to thank Mr. B. T. Rose for allowing me to report the first case.

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CLINICAL AND LABORATORY NOTES

PULMONARY EMBOLI OF LYMPHATIC ORIGIN

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CHYLOUS cysts of the mesentery and mesocolon were first fully described by Rokitsansky in 1842. Since then some 200 cases have been reported.^{1,2} The following case is recorded because of the comparative rarity of the primary condition, and because of the features shown after operation.

History.—A. B., aged 20, a nurse, was seen in January, 1935, and complained that for six years she had had a constant dragging pain in the left iliac fossa, with attacks of a colicky nature, when the pain radiated to the right iliac fossa. It had not been severe enough to keep her awake at night, but was getting worse. It was accompanied by nausea, but no vomiting. It had no relation to food, and was not relieved by lying down. The appetite was good and the bowels open regularly without aperients. She had been kept in bed for a fortnight, six weeks previously, and the pain had been slightly relieved.

Examination.—There was ill-defined tenderness in the left iliac fossa, with a feeling of resistance on deep palpation; but no other abnormality was discovered by clinical examination. Radiography showed no lesion of the gastro-intestinal or renal tracts. Blood count showed a relative lymphocytosis. Vernes's test was negative.

At operation (Jan. 23rd, 9.50 A.M.) a midline subumbilical incision was made and a unilocular cyst, the size and shape of a butcher's sausage, was found in the sigmoid mesocolon. On its outer surface were a number of small white spots. Some clear fluid was aspirated, the cyst excised, and the abdomen closed.

Pathological reports.—Fluid of cyst: clotted rapidly; nothing abnormal on bacteriological examination. Cyst wall: fibrous elastic tissue and muscular tissue arranged as in a vein; in a few parts there is an endothelial lining, but often it is bare; the white areas consist of fibrin, and necrotic tissue which is partially calcified.

After-history.—On the day after the operation, at 10.20 A.M., the patient, who had been quite comfortable, had a sudden attack of dyspnoea, with pain in the right side of the chest. She was pale, with a feeble irregular pulse. Oxygen was given continuously, and within two hours the pain and dyspnoea had disappeared, and the pulse had become more regular. At 1.15 P.M. on the same day there was another attack of severe dyspnoea, with pain on both sides of the chest. She was pale, and the pulse was barely perceptible at the wrist. Coramine 1.7 c.cm. was given, with oxygen, and she became much better in an hour. On Jan. 29th, at 11 P.M., there was a third attack of dyspnoea, with pain in the upper abdomen. The pulse and colour of the patient remained normal. Morphia gr. $\frac{1}{4}$ and oxygen were given, with improvement in an hour. The remainder of the convalescence was uneventful. She got up on Feb. 11th, and was discharged on Feb. 24th.

The three attacks of dyspnoea after the operation were undoubtedly due to pulmonary emboli. They appeared, however, earlier than is usual in post-operative cases. No large vessels were encountered in the removal of the cyst from the mesocolon, and no ligatures were applied. The lymphatic connexions were severed and it is to be expected that clotting of lymph occurred in these lymphatics, extending centrally. Fragments of these clots probably reached the general circulation through the thoracic duct and lodged in the right auricle. There, by deposition of fibrin, they would increase

in size, and they would finally pass through the pulmonary artery to cause obstruction of its branches in the lungs.

I should like to express my thanks to Prof. C. A. Pannett for permission to record this case.

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ORCHIDECTOMY ON THE HIGH SEAS

By PHILIP E. F. FROSSARD, M.R.C.S. Eng.

SURGEON, P. AND O. STEAM NAVIGATION CO.

A STEWARD, aged 30, with no previous history of disease, was admitted to the ship's hospital at 6.30 P.M. on Oct. 23rd, 1935. He had been struck on the scrotum by a cricket ball—a full pitch from a fast bowler—two hours previously. He was able to walk on board but was in considerable pain.

Local examination revealed a firm, tender swelling of moderate size of the right side of the scrotum and contents. At this stage there was no pain, tenderness, or swelling over the inguinal canal.

The patient was treated with rest and compresses, morphia gr. $\frac{1}{4}$ being administered after examination. The progress was apparently satisfactory. The patient was comfortable and the swelling began to subside. Five days later, on Oct. 28th, he complained of abdominal pain and of having had a restless night. The temperature was 99° F. and the pulse-rate 80. There was an increase of swelling and tension. The scrotum was red and oedematous. There was definite swelling and tenderness over the inguinal canal extending over its entire length and into the right iliac fossa. Owing to the exacerbation of symptoms and the possibility of added infection, it was decided to explore the scrotal contents and operation was performed on the same day.

The ship's operating theatre (appointed for the purpose) was made ready and the patient was on the table within an hour and a half, the ship having eased down to dead slow. The anæsthetic, administered by Dr. E. O'Brien, the assistant surgeon, consisted of ethyl chloride followed by open ether, a preliminary injection of morphia gr. $\frac{1}{4}$ and atropine gr. 1/100 having been given. Incision revealed the vaginal sac filled with blood clot and altered blood. The testis was seen to have been split near the centre right through to the epididymis, the split being in the transverse axis. The parenchyma bulged through the cleft tunica albuginea; the epididymis and cord were a dark purple, grossly swollen. It was evident that a condition of comparative local stasis of the blood circulation was present.

The left testis being uninjured and apparently normal, it was decided to remove the damaged organ, complete with the epididymis and cord at the level of the external abdominal ring. The infiltrated and inflamed scrotal sac was drained through a stab wound at the lower pole of



The testis after removal, showing the injury. The white line points to the split edge of the tunica albuginea.

the scrotum. The patient was returned to bed and made a satisfactory recovery. Three weeks later, on arrival in London, he was landed "convalescent."

It may be of interest to note that the operation was performed off Cape Guarda Fui in calm weather. The stopping of a ship at sea is a serious matter; like the stopping of a railway train, it is not to be undertaken lightly and there are penalties for the "improper use of the emergency signal." Unless sufficient way is maintained, the ship will not answer

to the helm and will fall off her course, and "not under control" signals have to be hoisted which occasion considerable concern to neighbouring craft. Hence on surgical occasions a speed is ordered which reduces vibration to nil and yet keeps the ship on her course.

Nowadays operations at sea are not the nightmares of old. Full aseptic technique is employed and only two conditions are required—namely, that both surgeon and patient are "sailors."

MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON

At the meeting of this society held on Dec. 9th, the President, Prof. G. E. GASK, occupying the chair, a discussion on the

Care and Treatment of Difficult Children

was opened by Dr. REGINALD MILLER, whose remarks are printed on p. 1393.

Dr. WILLIAM MOODIE said that every physician, whether a psychologist or one more or less orientated towards the physical side, must approach the problem of health or ill-health in the same way. It was necessary to define the medical attitude to the question, seeing that the lay press constantly printed articles telling parents how to do their jobs; there was being created in this country a kind of psychology consciousness, not perhaps entirely confined to laymen, which had antagonised scientific thinkers and had retarded the study of practical psychology. The latter could be an excellent servant, though as a master it might be disturbing. Theory was all right in its own place as a background: the foreground should be occupied by practice. He did not feel clear as to what was meant by the "difficult child" unless it was a mixture of the nervous child and the one who presented behaviour disorders or problems. The children under consideration were classifiable under two groups: (1) children who, through exhibiting some disorder of behaviour or conduct, showed nervous symptoms or made one feel that they were laying the foundation of what were termed functional nervous disorders; (2) delinquent children, manifesting something rather different. Every normal child behaved in an unusual way at times, because in the early days learning how to behave was not easy; it seemed to be a kind of match or contest "Self versus the Rest." The child made mistakes, because all learning was largely a matter of trial and error. When the learning period had passed, these slips of conduct must be regarded more seriously. A child sucking its thumb at six weeks of age excited no comment, but at six years this was a different matter. And every child was enuretic at some period. Some errors seen in later childhood might be no more than a persistence of habit. If a child was sucking its thumb at 8 years of age it was generally doing other unusual things also, such as sleep-walking or nail-biting, and was either shy or aggressively violent. Complexes of symptoms might be found which were an external evidence of some deep-lying mental disturbance. In these conditions lay the beginnings of the psychoses and psychoneuroses which showed in later life. Hence the "difficult child" was worthy of careful investigation and every therapeutic effort.

Behaviour was the result of two separate but inter-

dependent sets of circumstances: those (1) of the moment, (2) of the past. Such factors as fatigue, hunger, illness would affect the behaviour in definite ways. The investigation of the condition must be undertaken in a spirit of detachment. Every normal adult had within him the urge and desire to manage children, and in the presence of misbehaviour of the child to adopt a minatory attitude, but didactic methods seldom carried one far in psychology. Cause and effect must be linked only after careful observation, and every examination of a child must include a complete physical one, especially so as to detect any metabolic errors. And all information concerning the environment in which the child had been brought up must be obtained. The treatment must be so planned as to counteract the forces at work. There were four convenient groups from this point of view: (1) Obviously stable children who had to try to adapt themselves to abnormal environment; (2) children who, though stable, had been taught a bad style of living, and so experienced difficulties in adaptation; (3) unstable children who could not adapt to any conditions; (4) the mentally defective and psychotic.

There was, he said, an erroneous idea that the bright child must be kept back academically. Some children were being literally worn out by their own activity. In these children a frequent diagnosis was "nervousness," and the prognosis was usually "He will grow out of it," or "Keep him away from school and he will do well." For these restless energetic children Dr. Moodie considered that there was but one remedy—namely, real academic work: arithmetic, mathematics, reading, and writing. It was necessary that the balance between intelligence and attainment should be adjusted. Schoolmasters could not make this estimation. Dr. Moodie thought that the reliability of school reports sometimes varied inversely with the fees paid, or with the square or cube of the fees paid. Every child was the subject of fears and anxieties, and if his potential energy was dammed up, those fears became accentuated. In the presence of hard academic work the fears were seen to fade. An important matter was the need for a sense of security. This depended on a stable home and reasonable discipline. It was not possible to ensure the former, but discipline was possible for all, though many parents were incapable of exerting it reasonably. Much benefit followed the expression by the child of his thoughts and their subsequent discussion. The great object was to release repressed wishes. In this group of children much research still remained to be done.

Referring to delinquents, Dr. Moodie said that last year he examined 1700 delinquent children who had been tried in the London courts. Among them he found some interesting sexual cases, and some curiosities; but he had never seen any kleptomaniac children. A curve made of results of intelligence

tests among these children were practically of the same shape as that for the normal community, except that the peak was 93 instead of 100, indicating that delinquents as a whole were slightly dull. In all of them there was aggressiveness and resistance to authority, which, in many cases, could be traced back to disturbed marital conditions in the home. Also, a number of these children were compared in educational attainment with a large number taken from ordinary schools; it was found that the number of those backward in arithmetic was more than four times as great as those in ordinary schools; the relative degree of backwardness in the subjects of reading and writing was even greater. Dr. Moodie urged that the few mentally abnormal children in this group should be treated by some form of psychological analysis. Many of the children seen were not in themselves psychopathic and could be treated by general methods, such as by the adjustment of their education or the adjustment of their discipline.

Dr. W. G. WYLLIE pointed out that there was a small group of children who were unable to read or write at 9 to 14 years of age. At schools with large classes such children were either kept down with children younger than themselves and remaining at the bottom of the class even there, or they were said to be mentally deficient and were sent to some special school. For the defect of those children he thought the proper name was "visual imperception." They were able to recognise each separate letter, but stringing letters together to form words confused them. Sometimes parents, impressed by what the teacher said, thought they would see the doctor about them, as they seemed intelligent, and could go shopping successfully and bring back the right change. With the assistance of a psychologist at a child guidance clinic they changed from morose to happy children. He wondered whether the L.C.C. would have intelligence tests done on any large scale in the future.

Dr. C. F. HARRIS said he would like to underline Dr. Moodie's remarks about parental indiscipline, because so many of the children who seemed to have run across authority seemed to be suffering not so much from any evil trait or incompetence of their own, but from the fact that the parents themselves had not been subject to discipline, and so had no idea how to bring up their children. How many children stigmatised as "difficult" would be so under conditions which were normal? He agreed with Dr. Miller's suggestion to get such children away from their home surroundings and send them to a preparatory school. Instead of seeking to establish this "difficulty" as a clinical entity it would be well to realise that the children concerned were normal human beings under abnormal circumstances.

Dr. R. A. YOUNG agreed that this was a question of environment and parental control. The present generation of children had been brought up under rather happy circumstances and had been the friends of their parents. Perhaps there were already indications of a swing of the pendulum to a different state of things.

Dr. G. W. B. JAMES said the title "difficult children" seemed to boil itself down to "difficult parents"; of late years in his out-patient department his method had been to talk more to the parents than to the child. He fully agreed with Dr. Miller's remark that some fathers constituted excellent mothers. It was difficult for many homes in these days of economic stress to be run without a feeling of chronic anxiety, and anxiety exerted a tremendous influence

on the children. This was not confined to the poorer homes where unemployment always hovered; the rich man would return home and bewail that shares were down, and he was likely to be ruined. Examination of the parents and of the atmosphere of the home were the main factors in the treatment of difficult children.

Dr. D. W. WINNICOTT referred to the little band of psychotherapists who were content to peg away at a certain method of investigation which did not affect general practice because so few children could be treated by it. The parental factor was undeniably important, but he contended that it led nowhere in the matter of scientific investigation, because if the parent was difficult little could be done, the feeling being that the said parent ought to have been treated when young. It was not a question of telling some parents what to do, but of making them less anxious and rendering them happy in their home relations, an impossible task if they were not already happy. In the delinquent child the lack of parental love was a very important factor; and earlier experiences such as the lack of love of the infant were also significant. Many of these children were unwanted infants, and were passed from one person to another. The study of children need not be the study of their parents; much could be done by a study of the children themselves. Dr. Winnicott had been able to carry out a successful analysis of children, even when the external circumstances could not be altered and had remained unfavourable. Some children who looked as if they were mismanaged were extraordinarily difficult children who dealt with underlying depression in a manic way, and who, later in life, would become manic-depressives. In many cases of children who had been sent to him because the parents were bad he found himself sympathising with the parents.

Dr. MILLER, in reply, raised the question of the likelihood that children brought up in flats in central London who were unable to go out except fully clothed, and then not into playing fields, might reflect characteristics due to this unnatural environment. He considered that children of divorced parents mostly suffered from the parental side of their lives. It might be said that one mother was bad and one father was bad, but when a child had four parents it was something fairly severe for the child to put up with. His experience of school people was that they dreaded having the children of divorcees. He feared that the wealth of criticism and the spate of articles on the bringing up of children would have, as one result, the increasing of anxiety on the part of the mothers.

Dr. MOODIE, in reply, said he thought children could be brought up well in flats, though central London flats had not the advantages of those on the borders of Regent's Park. In an undue proportion of homes some disturbance of the marital situation existed; and many children came from broken homes. But if children were not subjected too long to disturbed homes and the children themselves were stable, they were able to get over their bad circumstances fairly well. He often pointed out to parents the difference between responsibility and guilt; one could be responsible for a situation without being blameworthy. The lateness of learning to read and write to which Dr. Wyllie had called attention was really an inability to appreciate position and form, which extended beyond the written word to other things.

MIDLAND MEDICAL SOCIETY

At a meeting of the Birmingham Medical Institute section of this society, held on Dec. 4th. with Prof. W. H. WYNN, the president, in the chair, a paper was read by Mr. J. W. RIDDOCH on

Surgical Shock

He said that Boise, writing in 1907, was apparently the first to put excessive sympathetic irritation among its causes. Work done during the late war had resulted in the toxæmic theory of shock being generally accepted, but in more recent years experiments by M. I. Smith and others rendered it untenable. Blalock had shown the importance of local fluid loss in experimental traumatic shock, but though the work of Holt and Macdonald and of O'Shaughnessy and Slome confirmed that of Blalock, they suggested that a nervous factor was also at work. It would be hard to convince clinicians that surgical shock was in no way related to centripetal nervous influences.

The clinical picture of advanced shock included a low blood-pressure, but the early stage might show a rise of, or no change in, the blood pressure. Even at this stage concentration of the blood had been demonstrated and there was diminution of the pulse pressure. Sensory stimuli caused rises of systolic pressure, and only later was there a fall in mean pressure with a big reduction in blood volume.

The causes of sympathetic activity included the unpleasant emotions (e.g., fear and anxiety) and pain, cold, and asphyxia. Such factors were recognised clinically as important in producing or intensifying shock. In postoperative shock and in wounded men (Cannon) the blood-sugar level was always found to be raised, and Mr. Riddoch showed that the rise in blood-sugar which occurs during abdominal operations under general anaesthesia could be stopped by splanchnic analgesia. This indicated that the hyperglycæmia was due to sympathetic action, and supported the theory that the raised blood-sugar in shock was associated with sympathetico-adrenal stimulation. Sherrington and Copeman (1893) had demonstrated a local increase in the specific gravity of the blood on stimulation of the sympathetic supply to the thyroid gland, and Bainbridge and Parkinson (1907) that chromaffin tissue was absent in death from postoperative shock, suggesting that there had been an intense outpouring of adrenaline. Bainbridge and Trevan (1917) produced shock with infusions of adrenaline and believed that the blood volume was reduced. Freeman (1933) with infusions of adrenaline got a reduction in blood volume of 14 per cent., and this was prevented by ergotoxine. In other experiments sham rage reduced the blood volume by 22 per cent., but this did not occur after ergotoxine, or after previous removal of the sympathetic chains. Thus excessive sympathetic activity was known to occur in shock, and all the known features of shock could be produced by excessive sympathetic stimulation.

The curious apathy and diminution of sensation was interesting in the light of recent work. Feng (1933) ascribed decreased sensibility, caused by injury to a piece of frog's skin, to liberation of potassium, which was present in higher concentration in the cells than the fluids of the body, and D'Silva (1933 and 1934) found that adrenaline and other sympathetic stimulants produced a rise in serum potassium. This liberation of potassium might well be the cause of the sensory depression observed in the shocked state.

The theory of sympathetic hyperactivity helped to explain why pleasant surroundings and the avoidance of mental stress are desirable, and why no surgeon likes to deal with the over-anxious type of patient. The good bedside manner thus acquired scientific sanction; and the principle of free choice of doctor had a physiological background.

THEORIES AND TREATMENT

Prof. SEYMOUR BARLING regarded circulatory collapse as the most noteworthy feature of secondary traumatic shock; the systolic pressure might fall to 90 mm. Hg or less, but this was not inconsistent with ultimate recovery. The mental condition varied, and in the presence of a painful lesion restlessness persisted and seemed to hasten the downhill progress. In the shock-like condition seen in gas-gangrene or other forms of overwhelming sepsis, the patient might be delirious, or alert and coherent up to the moment when he lay back dead. The clinician and the experimentalist had studied the problems of shock extensively but so far inconclusively. The experimentalist sought to produce and analyse the condition freed from all secondary factors which might disturb his experiment, whilst the clinician, finding a shock-like condition present under a number of diverse circumstances, sought common underlying factors as an explanation of all. To those who were doing surgery during the war, Dale's theory that shock is caused by histamine-like bodies of a depressor type, produced in the damaged area, was always attractive. Product as it was of the experimental methods, it had now been almost universally disproved by the experimentalists. Nor had it received much support on the clinical side; for although at first it seemed to explain the severe shock associated with burns this explanation broke down when it was found that tannic acid treatment, though otherwise useful, did not lessen mortality in the first 48 hours when shock was the effective cause of death. The theory that shock arises from fluid loss into the traumatised area by exudation of plasma and bleeding independent of external blood loss had always been satisfying to the clinician and had recently been supported by more exact experimental research. It explained the circulatory collapse and the value of remedies known to be helpful. It would be a mistake, however, to overlook the fact that more than one factor may be at work, and that in different types of clinical shock these factors may be effective in varying degree. That nerve-impulses from the traumatised area may play a part in the general depression of vitality seemed reasonable. The relationship of pain to shock; its effect in prolonging and developing the condition; and the beneficial effect of anaesthetics and analgesics had always been apparent to the clinician and seemed to support his contention that nervous influences play a part in the syndrome.

Until recently treatment had been empirical rather than scientific; in general it followed right lines and under conditions of emergency resolved itself into the war-time measures of morphine and rest to allay pain, blankets and hot-water bottles to give warmth, and hot sweet tea to supply fluid and mild stimulation. Undoubtedly prevention, and measures applied at an early stage, were more satisfactory than treatment of established shock. After the general comfort of the patient had been secured by rest, warmth, and morphine, active treatment was called for to deal with the fluid depletion; and in general the depletion of the blood volume in hæmorrhage or shock was best overcome by fluid from alimentary sources. intravenous infusion of saline was disappointing.

The gum-saline infusion of Bayliss was more satisfactory and should certainly be given in the presence of a blood pressure of 90 with a tendency to fall. There appeared to be no advantage in transfusing blood unless hæmorrhage had been the main factor in producing shock. In the natural anxiety to warm up the patient care must be taken to avoid excessive fluid loss by sweating—a fact sometimes overlooked. When active surgical treatment became necessary nitrous oxide and oxygen was undoubtedly the best of the general anaesthetics, with open ether in the second place. There were definite advantages in the use of local anaesthetic when applicable—especially in head injuries. No support had been received for the suggestion that spinal anaesthesia might assist the surgeon in dealing with a patient already suffering from shock.

THE ANÆSTHETIST'S PART

Dr. L. T. CLARKE said that the problem of surgical shock, or more particularly, its prevention, was an everyday matter for the anaesthetist. Formerly the usual prelude to an abdominal operation was a period of acute starvation punctuated by intensive purgation. The patient came to the table with his liver depleted of glycogen and his tissues dehydrated, and it was little wonder he suffered from shock. To-day pre-anaesthetic preparation was the antithesis of this, and the sedatives now in use had done much to eliminate psychic shock. It seemed a fine thing that a patient could be put into a deep sleep and so made unaware of the induction of anaesthesia.

Shock was a state of general depression and its main feature was a diminution in the volume of circulating blood. Where was the missing blood? Experiments on circulatory failure in frogs had shown that a large proportion of the blood stagnates in the liver. If, as was possible, this was also true of man, it followed that squeezing of the liver is a better method of resuscitation than cardiac massage, in that by driving the blood towards the heart it provides the natural stimulus to contraction—namely, distension. From the anaesthetist's point of view shock occurring during operation might be due to hæmorrhage, trauma, overdosage of anaesthetic, oxygen-deficiency, loss of body temperature, or length of operation. For hæmorrhage the surgeon could not be held wholly responsible: an ill-chosen anaesthetic might increase bleeding; for example, in radical amputation of the breast patients seemed to show less shock with chloroform and oxygen than with the more stimulating ether or the more congesting gas-and-oxygen. Trauma must be considered in the light of tissue destruction and nerve stimulation. Tissue destruction was the surgeon's province, yet here again the inadequate anaesthetic which failed to abolish muscle tone would cause him to be more traumatic than necessary. "I put my faith in deep anaesthesia," said Dr. Clarke; "fluctuating depths of anaesthesia invariably cause shock." In some types of operation nerve stimulation, with resultant reflex shock, could be obviated by nerve-block methods of anaesthesia. In these days of surgical diathermy it must be remembered that the diathermy electrode provides a point of intense local stimulation; the remedy was deeper general anaesthesia or some form of nerve-block. With regard to oxygen deficiency, the ill-effects of partial cyanosis over a long period could hardly be exaggerated; a clear airway was a vital necessity. The maintenance of body temperature, again, had a great influence on shock; draughts and unnecessary exposure must be avoided, but a too hot theatre was as bad as a too cold one.

A special problem arose when the patient was shocked before operation. Here there was a golden rule: the only case of shock that is not benefited by delaying operation is the one caused by active bleeding. Even here operation should be preceded by some attempt at fluid replacement, preferably by blood transfusion. The best anaesthetic in established shock was gas-and-oxygen. Spinal anaesthesia was to be avoided because it paralysed vasoconstrictor nerves. The solution of all problems was found in careful preoperative preparation, unfluctuating anaesthesia, and gentle surgery.

OPINIONS AND EXPERIENCES

Dr. STUART McDONALD believed that the histamine theory of shock was now exploded. The shock-producing effects of protein-cleavage substances should be considered, as in intestinal obstruction, acute pancreatitis, &c. The blood volume changes were important in shock; 47 per cent. of the circulating fluid might be lost with a traumatised limb. The sympathico-adrenal reaction was probably a defence mechanism in shock and not a direct cause. The vasomotor reactions might be regarded as an effect of stimulation of the vasodilator centre; or it might be that the vasodilator nerves were activated by acetylcholine in traumatic shock. The final collapse might be due to failure of the vasoconstrictor mechanism to allow of adequate medullary blood-supply. The influence of the nervous system was of great importance in shock.

Prof. BECKWITH WHITEHOUSE described some of his observations on obstetric shock. The element of fear, he said, was not uncommonly induced by comments in the press. In some cases the amount of trauma was negligible but shock was nevertheless severe. He recalled the case of a woman of excitable type who read medical literature and in whom demonstrable fear was exaggerated. She made her will the day before labour. She had a perfectly normal labour, but a short time afterwards she died of sheer fright. In gynaecological surgery, while a severe operation would cause shock in an unemotional patient, the apprehensive patient was a much more dangerous problem. The emotional factor played a large part in the relative frequency of deaths from illegal operations.

Dr. H. W. FEATHERSTONE stated that there were two causes of shock in simple dental gas anaesthesia—namely, asphyxia and preoperative fear. The patient might be cold, clammy, and feel ill for some moments afterwards. With spinal anaesthesia acute shock and collapse occurred. The speaker wondered whether the large bulk of dilute novocain solution injected in splanchnic anaesthesia might cause disturbance in liver function. During anaesthesia the Trendelenburg position was very favourable, whereas there was a real danger if the patient was on the face and the head raised.

Mr. BERNARD WARD thought there was no direct evidence against Crile's views on shock. Crile's kinetic theory was a very useful basis, and had profoundly modified the procedures used for prevention of shock. Nerve-block certainly minimised certain changes in the brain, liver, and adrenals, which otherwise followed trauma.

Prof. W. GEMMILL quoted cases of delayed shock. A boy playing football injured his humerus but continued to play, and after the game passed into profound shock. He believed the sympathetic nervous system tended to counteract shock.

The PRESIDENT wondered whether all the speakers had all spoken of the same condition. Were there

various syndromes of shock? In pneumonia or toxic scarlet fever a condition of circulatory failure simulating surgical shock was seen. He thought that a biochemical basis would eventually be discovered as the essential cause of shock. Fear might start the train of events but he doubted if it could initiate shock.

MANCHESTER MEDICAL SOCIETY

At a meeting of this society on Nov. 6th Mr. H. H. RAYNER spoke on the

Treatment of the Enlarged Prostate

After tracing the development of prostatectomy since its establishment as a practicable operation about 1901, he pointed out that little improvement had been made in the technique until the last few years, though better results had been obtained because preoperative preparation had improved through the whole period. Even to-day, however, in his anxiety to improve the renal function before operation by drainage of the bladder, the surgeon sometimes inflicted the grave handicap of sepsis on the patient by faulty methods in the use of the inlying catheter or by failure to recognise in time that a particular case is unsuited to this type of drainage. During the last ten years there had been considerable advances in the actual technique of treatment; there was perurethral resection on the one hand and the refinement of the open operation introduced by Harris on the other. Harris's operation had really eliminated the chief objections to open prostatectomy—uncertain control of hæmorrhage and sepsis. According to modern views of the mechanism of urination, the opening of the vesical meatus is accomplished by a pulling backwards of its posterior lip. If this lip was thickened or rigid the opening was likely to be obstructed, and this was the explanation of classical symptoms of prostatic obstruction occurring when the prostate is not enlarged. In the treatment of patients with this type of obstruction perurethral resection must be regarded as the treatment of choice, for it gave results as good as the open operation, with much less trouble to the patient. Most surgeons preferred the open operation of enucleation for the patient with gross enlargement of the prostate, for the results were more certain and the risk little if any greater. But with a very infirm or broken-down patient who had lasting retention a very limited resection of a large prostate often succeeded in restoring voluntary micturition, and though this benefit might be but temporary it was clearly preferable in such cases to a radical operation.

Open prostatectomy had received a great impetus from the Harris technique, the essential feature of which was the covering of the ragged walls of the prostatic cavity by the vesical mucous membrane. The advantages of this was assured hæmostasis without use of packing or bags; in consequence suprapubic drainage of the bladder after the operation was either dispensed with or employed for two or three days only with a fine-bore tube. Thus healing of the abdominal wound and restoration of natural micturition could be obtained within about a fortnight with considerable regularity. Mr. Rayner's experience of 19 such operations had led him to regard the method as standard and only to be departed from under exceptional conditions. Finally he pointed out that the personal attention of the surgeon and the services (almost whole-time) of an experienced nurse in the preparatory and after-treatment

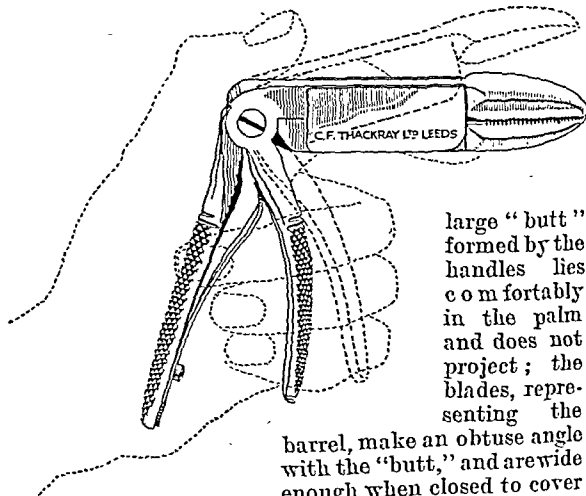
were as important as the technique of the operation; hence, in great part, the striking disparity between the results of the operation in private and in hospital practice.

NEW INVENTIONS

FORCEPS FOR ESTABLISHING ABDOMINAL DRAINAGE BY COUNTER-INCISION

THE simple act of draining the abdomen through counter-incisions can sometimes become exasperating when we employ ordinary clamps or forceps. These makeshifts do not protect the finger, though we cut down on them blindly; they are poor targets for the knife, and rarely fit the hand that must open and close them amid coils of gut. It is not surprising then that fingers are hurt, and drains fail to pass through inadequate openings. The best makeshift is a short Lane's tissue-forceps, but the dangerous fenestrations discount the advantage of its wide extremity.

I have therefore had made for me a special forceps that serves—like a pistol—for either hand. The



large "butt" formed by the handles lies comfortably in the palm and does not project; the blades, representing the

barrel, make an obtuse angle with the "butt," and are wide enough when closed to cover

and shield the index-finger which points along them. Before cutting down through the abdominal wall on to the forceps, the tip of the index is slipped out from under the blades to feel for a spot free from gut on the parietal peritoneum. After finding the spot the finger can at once be replaced by the end of the forceps, which is grooved for the knife with a wide gutter, easily felt through skin and muscle. A spring keeps the blades apart, and when closed they overlap along their whole length so that there shall be no risk of the surgeon wounding his finger if he neglects to close them completely. The blades will not gape until the abdominal opening from which they emerge is large enough to admit a drain of average diameter. The pistol shape simplifies the excellent incision for posterior drainage advised by H. R. G. Poate in cholecystectomy (*Jour. Coll. Surgs., Australasia*, 1930, iii., 264) and, after interventions in the upper abdomen, a turn of the wrist will bring a suprapubic drain to the bottom of the pelvis.

I find that I can use this instrument safely with the complete assurance of drawing a tube into the abdomen at the first attempt. The instrument has been made for me by Messrs. Thackray Ltd. of Leeds.

A. K. HENRY, M.B. Dub., F.R.C.S. Irel.
Surgical Unit Kasr-el-Aini Hospital, Cairo.

REVIEWS AND NOTICES OF BOOKS

Great Doctors of the Nineteenth Century

By Sir WILLIAM HALE-WHITE, K.B.E., M.D., F.R.C.P., Consulting Physician to Guy's Hospital. London: Edward Arnold and Co. 1935. Pp. 325. 15s.

SINCE his retirement Sir William Hale-White has been spending some of his leisure pleasantly and profitably in writing a book and, as a true son of "Mark Rutherford," he has turned naturally to biography. The book contains 17 short biographies of great figures in nineteenth century medicine. The author's excellent method is to tell us first something about the man and secondly about what he did. Starting with Jenner, naturalist and country doctor, and ending with Sir Ronald Ross, poet and mathematician, we learn among many other things of the urbanity of Sir Astley Cooper and that Sir Charles Bell was not merely a great neurologist, but also a keen angler. Here is to be found an account of the life and work of that distinguished observer Richard Bright who, in addition to the disease which bears his name, first described chronic proliferative peritonitis and also Addison's disease (though he did not connect the latter with morbidity of the suprarenals). Others considered are Marshall Hall, who not only put an end to the practice of indiscriminate bleeding, but also gave us the theory of reflex action and a method of artificial respiration; Thomas Addison who, besides the two diseases called after him, first described appendicitis and inaugurated a system of case-taking by students at Guy's Hospital; Sir William Stokes, of the Stokes-Adams syndrome and Cheyne-Stokes respiration; Sir James Simpson, the obstetrician who introduced chloroform; and Sir James Paget, "the most successful man of his day," whose name, like those of Addison and Stokes, is associated with two distinct morbid conditions. Next come Sir William Bowman, histologist and ophthalmologist; Sir John Simon, the sanitarian who almost deduced the subsequent discovery of pathogenic organisms; Sir William Gull ("the physician in fashion though never the . . ."), famous for his work on . . .; and Sir Samuel Wilks, who not only demonstrated the visceral lesions of syphilis, but also rescued another's name from obscurity by putting Hodgkin's disease on the map. The remaining three articles deal with Lister, Hughlings Jackson, and Manson, names which could not properly be omitted from any such symposium. Naturally other famous figures cross the stage. Many receive more than passing notice from the author, and if most of his heroes are Guy's men none will blame him for his partiality. The reading is so agreeable that it is almost an impertinence to draw attention to certain eccentricities of punctuation or to the occasional harsh treatment of infinitives, but we feel sure that where "trite" is used on page 216, "terse" is really intended.

A book to be commended to doctors, laymen, and, above all, to medical students.

Tumours of the Urinary Bladder

By EDWIN BEER, M.D., F.A.C.S., Visiting Surgeon, Mount Sinai Hospital; Consulting Surgeon, Bellevue Hospital, New York City. London: Baillière, Tindall and Cox. 1935. Pp. 166. 16s.

THERE is no one better qualified to write on the treatment of bladder growths than Dr. Edwin Beer, for it was through his introduction of the high-

frequency current in 1910 as a means of treating vesical papilloma that this valuable therapeutic weapon was first made available to urologists. The present work is the outcome of 25 years' experience of bladder growths. During that time he has employed all the available methods of therapy, and in the work under review he seeks to estimate their value and to show which method of treatment is indicated in a particular case. Results have been analysed and a basis for comparison provided from the statistics of the Mount Sinai Hospital, where most of the work was done.

In Chapter 5 Dr. Beer points out that there are six main methods of therapy available in a case of bladder growth; transurethral electro-coagulation; transurethral introduction of radon seeds; suprapubic cystotomy with excision or open diathermy; suprapubic resection of the involved bladder wall; suprapubic total cystectomy; deep X ray therapy; and a combination of these various methods. Of deep X ray therapy, Dr. Beer has very little good to report. He has never seen a case cured by such means and regards it simply as a method of treatment for intractable hæmorrhage. In general his opinion of other methods of treatment harmonises with that voiced at the International Congress of Urology held in Brussels in 1927 and the French Urological Congress in 1932. Perhaps his view of the dangers and curative value of total cystectomy is less pessimistic than was that of the majority of surgeons speaking at these congresses, but it is only in matters of detail that his views differ from theirs.

The work is provided with the most complete bibliography of the literature of bladder growths that we have seen in any text-book. This bibliography takes up 26 pages and should prove of great value. The illustrations are excellent and include eight coloured plates.

Mucous and Salivary Gland Tumours

A Clinical Study with special reference to Radiotherapy, based on 254 cases treated at Radiumhemmet, Stockholm. By HUGO E. AHLBOM. Stockholm: Kungl. Boktryckeriet. P. A. Norstedt & Söner. 1935. Pp. 452. Swed. Cr.20.

DURING the years since the foundation of Radiumhemmet in Stockholm a number of monographs on malignant tumours have been published by the staff, and this latest addition takes a worthy place in the succession. Dr. Ahlbom begins with a careful review of the pathology of the tumours of the salivary glands; and the large number of references and very varied opinions quoted show that the question presents many difficulties. He accepts Ewing's view that the tumours are epithelial in origin, and the excellent illustrations of histological sections support this contention despite the rather misleading designation of fibro-myxo-chondro-epithelial tumour. The division into benign, semi-malignant, and malignant tumours would appear to be undesirable from the point of view of classification, though clinically it may be convenient. Much space is devoted to the discussion of the relation between the histological findings and the clinical symptoms. The experience gained from the treatment of 254 cases makes this section a striking reminder of the various lines along which these tumours, mostly of slow evolution, may develop, and the varied, and sometimes surprising, symptoms to which they may give rise. Differential

diagnosis is from tuberculosis, actinomycosis, inflammatory conditions, and salivary calculi, and between tumours of the histological types described. For this purpose a preliminary course of radiation may be used, the radio-sensitivity of the tumour giving an indication of its type. If biopsy is performed it should follow radiation, and the necessity of care in selecting the material for examination is emphasised.

The most interesting section is that on treatment. Surgical excision is still frequently chosen and follows the usual lines, complete removal of the capsule being considered essential. The diathermy knife may be used for excision, but more often the tumour with the surrounding tissue is coagulated by means of the endotherm and left to slough spontaneously. After surgical treatment, unless the tumour is benign, radium is inserted into the cavity, either immediately or later, but the wound is primarily sutured as far as possible. Tubes containing 25 mg. of radium of 15 to 20 mm. length and 3 mm. diameter are used, screened with a layer of 2 to 3 mm. of lead covered by a thin layer of dental compound so that the radium to tissue distance cannot be less than 4 to 5 mm. The radium is usually left in for 24 hours, but doses vary from 300 to 1800 milligramme hours, and are usually supplemented by external radiation. This may be given with Sievert's teleradium apparatus containing 3 grammes of radium with a skin distance of 6 cm. and filtered by 6 mm. of lead. 40 'gramme hours are given to one field in one to two weeks, producing a reaction of the order of epidermitis exsudativa.

Radiumhemmet has not yet accepted the r unit for radium dosage, preferring to express this as Imc hours, but the use of Sievert's condenser chambers allows of accurate measurement, and as the Imc bears a definite relation to the r unit (the latest figure given by Mayneord is one Sievert unit equals 8.3 r units) comparison with the doses given elsewhere is easy. With X ray therapy the method is "simple fractional radiation"; 200 to 600 r per day, measured on skin, are given, 10 by 10 or 10 by 12 being the usual size of field. The total dose per field is 3000 to 5000 r.

The results in "semi-malignant" tumours treated surgically show 17 per cent. of recurrence up to 5 years with 4 deaths in 32 cases; with the addition of radiotherapy there were no recurrences in 5 years. The uncertainty of the diagnosis, however, makes this of little significance. In the frankly malignant cases 25 per cent. of 93 cases survived 5 years, and some interesting statistics for the different methods of treatment are given.

Besides the microphotographs there are some excellent clinical photographs and paintings.

A Guide to Human Parasitology

For Medical Practitioners. Second edition. By D. B. BLACKLOCK, M.D. Edin., D.P.H. Lond., D.T.M. Liverp., Professor of Tropical Hygiene, Liverpool School of Tropical Medicine; and T. SOUTHWELL, D.Sc., Ph.D., A.R.C.Sc., F.Z.S., F.R.S.E., Walter Myers Lecturer in Parasitology, Liverpool School of Tropical Medicine. London: H. K. Lewis and Co., Ltd. 1935. Pp. 260. 12s. 6d.

THE authors of this book have done what they set out to do—namely, to give a clear account of the common pathogenic parasites of man in all climates, with descriptions of methods of diagnosis which are quickly learnt and easily carried out. They take

the reader over the care of the microscope and its use for examination and measurement; they discuss adequately the preparation of material; they describe protozoa, worms, and fly larvae in sufficient detail; and they give in addition one series of valuable tables on the diagnosis and spread of parasites, and another of diagrams which set out most clearly their life-histories. There are a few omissions, notably that of trichostrongylus infection, which is not uncommon; the failure to recognise its eggs has brought discredit to the doctor and depression to his patient. The unqualified statement is made that unfertile ascaris eggs are present because the host harbours only female worms; but the experience of G. F. Otto and of A. E. Keller over two large series of cases has been that unfertile eggs mixed with fertile ones are present in over 40 per cent. of cases. There is no mention of the large dorsal tooth of necator. The book is clearly written and well illustrated, and attention has only been drawn to a few matters needing revision in a third edition because of its general excellence and reliability.

The Psychology of Everyman

Nerves and the Masses. By DR. GEORGE DEVINE. London: Hutchinson and Co., Ltd. 1935. Pp. 319. 16s.

ASTONISHMENT is sometimes expressed that so much antagonism and distrust of medical psychology should be shown in certain orthodox quarters. This book serves in part to explain such an attitude towards what is actually a respected and established branch of medicine. Here are the over-confidence, the carelessness about evidence, the assertion of personal opinion, the mixture of knowledge and guesswork, the looseness of language, and the appeal to popular sentiment which antagonise serious doctors, and to which the subject still lends itself in the hands of enthusiasts. "Subconscious psychic force," for example, is here invoked to explain enfeeblement of the "Dormant Personality Unit"; as treatment "Mental Catharsis" is proposed, making use of the "Escape Mechanism"; conjoined with it is the exhibition of unspecified "Hormones" to help in "building up the nervous system of the psychoneurotic." If the book presented current teaching about mental disorder, using the term in the widest sense, then its far from sober style might be condoned; but many of its pronouncements cannot be reconciled with sound psychiatric opinion. Since there are already so many works which give trustworthy accounts of the present state of knowledge in this field, Dr. George Devine's book cannot be recommended.

Handbook of Bacteriology for Students and Practitioners of Medicine

Fourth edition. By JOSEPH W. BIGGER, M.D., Sc.D. Dub., F.R.C.P.I., D.P.H., Professor of Bacteriology and Preventive Medicine, University of Dublin. London: Baillière, Tindall and Cox. 1935. Pp. 458. 12s. 6d.

A NEW edition of this popular handbook issued three and a half years after its predecessor shows signs of extensive revision, though the size of the book has not been increased. No work on the subject covers more successfully the range of knowledge in bacteriology required from the student aiming at a qualification in medicine and the practitioner will find that it meets all his reasonable needs.

THE LANCET

LONDON: SATURDAY, DECEMBER 21, 1935

PLEURAL SHOCK AND/OR AIR EMBOLISM

Two bogies, remote but terrifying, attend on acupuncture of the thoracic wall. Dr. W. F. HAMILTON recently presented¹ to a combined meeting of the American and Canadian Medical Associations a careful analysis of 34,060 such punctures collected from American and German sources among which there were 112 accidents and 12 deaths. He excludes from this series a remarkable record² of M. BORSCH and D. WIDRÉ who made 13,932 punctures on 890 patients with only 12 accidents and no death. Sudden pain, even the touching of a part unused to touch, may, it seems, in rare instances cause syncope or sudden death, but, we may fairly presume, only in those whose constitutions are in a peculiar state. Fatal syncope has been recorded not only during pleural puncture, but even in such simple procedures as digital examination of the rectum. An editorial article in the issue of the Canadian journal containing Dr. HAMILTON's article states that pleural shock is rare, although not all the cases that occur are reported, while it quotes Dr. C. H. COCKE's reiterated opinion³ that air embolism is rare and pleural irritation relatively common as a cause of shock. Something may well depend on the technique. Done in the manner in which pleural puncture is sometimes performed—with blunt or turned instruments, badly made trocars and cannulas, failure to find the intercostal space leading to impact of steel on rib, neglect or imperfect use of local anaesthesia—it may well be that syncope sometimes occurs, and perhaps syncope is sometimes nearer death than we know. Yet there are those in this country who have punctured the chest thousands of times in all types of case and at all ages, without encountering serious shock; the careful clinician, aware of its possibility, endeavours to prevent it by employing every measure to prevent pain or sudden sensation. At the Victoria Park Hospital, where some five thousand refills are given each year, only one case of so-called pleural shock has occurred—and that not fatal. Novocain had been used but there was difficulty in finding the air space.

Air embolism, on the other hand, appears to be less uncommon in this country. Many instances have been recorded in which embolism was proved for certain by physical signs such as hemiplegia and by post-mortem demonstration. It is curious that it should not occur more often in inducing a pneumothorax. The fear of it led Prof. E. RIST to advocate oxygen for induction; but oxygen is not generally used for the purpose in this country,

doubtless because so few cases of air embolism are met with at this stage. It is rather during refills that the disaster occurs. There is no mystery, as a rule, about its mechanism. A pulmonary vein is punctured or lacerated; air enters from the instrument, from the pleural cavity, or possibly from the lung; it is drawn into the left heart, and then travels by the aorta to various destinations. If air embolism happens during a refill it must mean that either an adhesion or the lung itself has been punctured. This is one good reason for inducing local anaesthesia as a preliminary to every refill; not only to avoid pain and possible shock, but to make sure that there is an air space and a free air space. If a long slender needle is pushed gently into the pleural cavity, and air withdrawn through it into the syringe, it is practically impossible for air embolism to occur; whereas if the refill needle when inserted is attached to the tube of the apparatus there is nothing to prevent a considerable quantity of air being aspirated if its point should enter a branch of the pulmonary vein. What happens then is a question of chance. If a little air goes to a muscle, probably no symptoms are produced; if the same amount reaches the brain or the coronary arteries, serious symptoms will be produced. Larger quantities of air entering the pulmonary vein may cause death from disturbance of the heart's action when they reach the left chambers. Post mortem, however, it may be difficult or impossible to demonstrate small quantities of air in the coronary artery, and death is wrongly attributed to pleural shock. All this being borne in mind, in every case where there is or may be difficulty in finding the pneumothorax, the careful operator will introduce the refill needle on the end of a syringe. Air then cannot be drawn into a vein from the apparatus.

If as seems probable, owing to careful technique, both pleural shock and air embolism are now rare accidents of thoracic puncture, they may well be avoided altogether by still more careful technique.

TRICHOMONAS VAGINITIS

Of late years much more notice has been taken of the flagellate protozoon *Trichomonas vaginalis*. What does its presence in the vaginal secretion signify? Some authorities think the organism identical with its neighbour of the lower intestinal tract and also with the *T. buccalis* sometimes found in the mouth and the throat. The suggestion is therefore made that the vagina is infected from the anus—possibly in mechanical fashion through the custom of cleansing the anal region from behind forwards. On the other hand, it is quite certain that the trichomonas can dwell in the vagina without giving rise to symptoms and signs of infection. Hence it is often regarded as a normal vaginal inhabitant which may become pathogenic under abnormal circumstances.

Whatever the true aetiology, there is no doubt that the condition termed "trichomonas vaginitis" is a clinical entity with characteristic features. The onset is usually acute: the vaginal discharge

¹ Canad. Med. Assoc. Jour., October, 1935, p. 370.

² Beitr. z. Klin. d. Tub., 1928, lxi., 324.

³ Amer. Rev. Tub., 1931, xxiv., 545, and 1935, xxxi., 404.

is profuse, greenish-yellow, frothy, and malodorous. Vulvar itching and burning are common, and severe intertrigo of the skin of the vulva and thighs may develop. Clinically the picture is that of acute vaginitis, and examination of a fresh specimen of the discharge shows leucocytes, epithelial cells, bacteria, and large numbers of active flagellate protozoa. The question arises: why this sudden pathogenic activity on the part of an often harmless parasite? The answer most in favour is that something has happened to reduce the local immunity of the vaginal wall. HIBBERT¹ and HESSELTINE² have provided evidence that the additional element is infection by a non-hæmolytic streptococcus; indeed the latter thought the pathogenicity of *T. vaginalis* unproven and deemed it a scavenger which feeds upon bacteria. ALLEN, JENSEN, and WOOD³ now bring forward their reasons for believing that the vaginitis is due to symbiosis between a streptococcus and the trichomonas protozoan. They note that the symptoms vary considerably and that the typical clinical picture is not always seen. Symptoms referred to the bladder and the urethra—such as frequency, dysuria, nocturia, and even incontinence—may be so pronounced as to mask the vaginal source of the infection. This fact has already been emphasised by others, particularly by SAYER,⁴ who believes that the bladder forms the "residual habitat" of the parasite from which reinfestation of vagina and vulva occurs. ALLEN and his colleagues state that about a quarter of their patients develop menorrhagia, occasionally associated with metrorrhagia, and they attribute this to pelvic cellulitis resulting from upward spread of the streptococcal infection. The strains of streptococci which they were able to isolate from the vaginal secretions were of the green-producing type, and they were classified according to the curves of their electrical potential as estimated by their rate of movement towards the anode when in suspension in a cataphoretic cell through which an electric current was passed. In this way it was shown that their electrical grouping was different from that of streptococci isolated from the normal vagina and from the nasopharyngeal and tonsillar regions. The groupings of streptococci obtained from various infections with *T. vaginalis* were closely similar.

Examination of the male contacts of some of the patients gave interesting results. Seven showed evidence of chronic prostatitis and from the prostatic secretions a streptococcus was isolated which showed electrical reactions similar to those of the organisms obtained from the vagina. In six of the male contacts the trichomonas was actually recovered from the prostatic secretions, and in only three of those examined was it impossible to find either trichomonas or streptococcus. The investigators emphasise the regularity of this association of coccus and protozoan and regard sexual intercourse as the most likely means of

transferring the infection. They held that both trichomonas prostatitis and trichomonas vaginitis may well be added to the list of venereal diseases; and while these conclusions are not entirely acceptable on the evidence so far collected, it looks as though further investigations of this kind would soon make the nature of the infection much clearer.

CONTROL OF MYOPIA

THERE has been a growing tendency to take a somewhat fatalistic view of myopia and to belittle the influence of school hygiene on its incidence. Whatever view we may take of its causation, however—and without doubt the factors that play a part are various and differ in different cases—the belief doubted by some but still unrefuted holds the field, that prolonged application to close work by children and young adults with a tendency to myopia, acquired or inherited, leads to its increase. Among ophthalmic surgeons the share taken by excessive convergence in the causation of myopia is still in dispute. Mr. BISHOP HARMAN has no doubt of the harm done by prolonged close eye work, in susceptible children, or of the value of controlling eye work in myopes.¹ Sir JOHN PARSONS, on the other hand, doubts whether a reasonable amount of near work under good hygienic conditions does any harm to low myopes²; and there are some who believe that myopia is neither originated nor increased by near work.³ Those who argue in this way are fond of pointing to certain cases, or classes of cases, where the main cause of the origin or increase of myopia is certainly not near work—e.g., cases where the hereditary element is strong, cases of monocular myopia, myopia in such persons as agricultural labourers who have never been studious. There is also the so-called anterior myopia where the trouble lies not in a yielding sclera but in the cornea or the lens. No one maintains that prolonged convergence is the sole cause of myopia, but only that in the majority of cases, and especially in what is known as school myopia, excessive book work is an important contributing cause.

The mechanism of production is equally in dispute. In the middle of the nineteenth century DONDERs and his successors thought that prolonged accommodation weakens the resistance of the sclera to intraocular pressure; but this idea was proved to be fallacious. It was then argued that pressure of the external eye muscles and especially of the superior oblique, active in convergence, was the explanation; but this has never been proved. Dr. EDWARD JACKSON holds a somewhat different view⁴ of the mechanism of convergence in lengthening the axis of the myopic eye. The main obstacle to free movement of the eyeball, he points out, is the rigid optic nerve, firmly attached to the sclera. In convergence this resistance is constantly added to that of opposing muscles and other tissues. The forces

¹ Hibbert, G. F.: Amer. Jour. Obst. and Gyn., 1933, xxv., 465.

² Hesseeltine, H. C.: Ibid., 1933, xxvi., 46.

³ Allen, E., Jensen, L. B., and Wood, I. H.: Ibid., 1935, xxx., 563, 736.

⁴ Sayer, J. H.: Northwest Medicine, 1931, xxx., 278.

¹ THE LANCET, 1933, I, 129.

² Ibid., 1933, II, 796.

³ Brit. Med. Jour., 1919, II, 420.

⁴ Jour. Amer. Med. Assoc., Nov. 2nd, 1935, p. 1412.

meet around the attachment of the optic nerve, but the effects produced on the temporal and nasal sides are different. On the nasal side the tissues are jambed together by the turning in of the eyeball, while on the temporal side of the nerve entrance they are stretched. It is on this side that ophthalmoscopic signs of progressive myopia are nearly always found, beginning with the typical myopic crescent and going on to choroidal disturbances between the disc and the macula. JACKSON'S hypothesis is at any rate plausible and is in accordance with the fundal changes in a great many cases. If it is true, the obvious necessity is to prescribe spectacles for constant wear which by correcting the myopia, together with any astigmatism present, put the eye in the same condition as that of an emmetropic eye—removing the temptation to undue convergence without interfering with the ordinary education. This is in fact the usual present-day practice. But it might be difficult to produce statistical justification for it. The steady increase of myopia during school life no longer counts as evidence, and some recent observations⁵ on

⁵ *Ibid.*, Oct. 26th, 1935, p. 1336.

the increase of myopia in Japan, where it is said to have more than doubled among school-children in the last twenty years during which time the strain of competitive examinations has continually grown, are similarly unconvincing. Dr. JACKSON himself sets out the results of full correction, drawn from 381 of his own private patients watched during a number of years, but obviously he could not check his results by comparison with a similar series of myopes treated by himself on a system in which he did not believe.

No one denies the influence of factors other than excessive convergence in the production of the myopic eye, but it so happens that excessive convergence can be corrected whereas the others cannot. With our present knowledge (or ignorance) it would be unwise to tamper with the principle on which most young myopes are now treated or to discourage efforts to secure special care for myopic children. Besides the wearing of fully correcting glasses this of course includes the correction of any faulty habits of posture that the child may have acquired, but not the attempt to limit the effort of accommodation required in ordinary life.

ANNOTATIONS

RICHET AND ANAPHYLAXIS

THE present age imposes specialisation and demands broadmindedness, and its motto may be said to be "live and let live," a comfortable but sometimes dangerous precept for the scientific research worker. The passing generation did not admit this philosophy; William Bayliss wrote, "my experience teaches me that it is better to hold a well-understood and intelligible opinion, even if it should turn out to be wrong, than to be content with a muddle-headed mixture of conflicting views, sometimes miscalled impartiality, and often no better than no opinion at all." The many-sided life of Charles Richet (of whom a biographical sketch appeared in our last issue, p. 1380) is one of the best examples of this point of view translated into tireless activity; wherever his interest rested, there it begat independent investigation. How many bacteriologists, even with the most catholic interests, would have thought of investigating the toxic properties of the tentacles of the sea-anemone? How many physiologists, having isolated the toxin, would have tested the power of a non-fatal dose to confer immunity to subsequent injections? Yet one has only to glance at the researches of Richet carried out during the last 25 years of the nineteenth century to realise that for him nothing would be more natural. It was not altogether accident which led to the surprising discovery that a fortnight after administration of the toxin a dog was not less but more sensitive to a subsequent dose. This phenomenon was described by Portier and Richet in 1902 and called *anaphylaxis* on account of its being apparently the reverse of immunity. The term has passed into general usage, but Richet lived to see the simple conception from which it sprang fade far into the background. Obviously connected in some way with immunity and allied phenomena, the subject aroused much interest and gave a new impetus to research; in 1912 Richet published a monograph "*L'Anaphylaxie*,"

and in 1913 he was awarded the Nobel prize for medicine. In spite of the enormous amount of work which has been done since then, no theory has been entirely successful in explaining the fundamental reason why the second injection of a foreign protein should cause anaphylactic shock, but the side issues which have been raised have proved fruitful in many directions. Whatever the explanation ultimately accepted, it must also account for, or help to account for, other manifestations of hypersensitivity, from the tuberculin and similar reactions to everyday afflictions such as urticaria, asthma, and hay-fever, and its precise relation to the phenomena of immunity must be revealed.

RECOVERY FROM CORROSIVE POISONING

LAST year Prof. H. Salzer of Vienna published a paper¹ on corrosive burns of the oesophagus and their early treatment by dilatation. In support of such early treatment he stated that 163 of his 180 cases terminated in recovery. This paper has now drawn a well-documented answer and criticism² from Prof. S. Bélinoff of Sofia. During the past five years he has treated an average of 55 cases of corrosive oesophagitis every year; 170 of his 274 cases were acute, the rest were chronic. The 170 acute cases were classified in three groups, according as they were (1) so slight as not to require treatment, (2) so severe that they were fatal before treatment could be instituted, and (3) of moderate severity. The number of cases in these groups was 18, 46, and 106 respectively. If only the 106 patients who received treatment be considered, recovery or improvement could be claimed in 73 per cent., while the mortality was 23 per cent. Salzer's recovery-rate of 89 per cent. must be considered in the light of the fact that all his patients were children, whereas only 20 of Bélinoff's were children under the age

¹ *Wien. med. Woch.*, June 30th, 1934, p. 736.

² *Presse méd.*, Oct. 9th, 1935, p. 1564.

of 15. Now there is a good deal of difference between the corrosive poisoning of children and that of adults. The former take corrosives by accident, spitting them out promptly, and seldom swallowing much. The corrosive poisoning of adults is usually an attempt at suicide, large quantities of corrosive being swallowed, and the resulting burns are comparatively severe. The œsophagus of a child is more elastic than is the adult œsophagus, and the natural growth may widen the lumen; this again is a factor affecting prognosis. Bélinoff, who does not begin to dilate the œsophagus till some seven to ten days after a burn, and who uses apparatus specially designed for the purpose, pleads for the use of a common denominator when the merits of various methods of treatment are compared. Before any claim can be made on behalf of some treatment or other, the claimant must state the age of his patients and classify them according to the severity of their burns. If he does this and eliminates the patients requiring no treatment and those who die before any treatment can be given, he should have a uniform residuum *where-with to compare his therapeutic achievements with those of other observers.*

CORYZA AIGU BANAL

THAT when there are many remedies there is no cure is now a proverb; that doctors cannot cure a cold is a gibe to which we have grown accustomed, if not resigned. In an unusual spirit of optimism the editors of the *Vie médicale* devote their latest symposium¹ to the evergreen problem of coryza. Twenty-two distinguished physicians and laryngologists give their views on the subject; but alas their wide diversity neither refutes the proverb, nor provides an effective retort to the gibe. Dr. P. Aubriot, of Nancy, divides the common cold into two phases, the vasomotor and the infective. It is only in the former, and shorter, phase that treatment may abort the disease. He advocates the use of pilocarpine but does not disclose how, when, or in what dose it is to be given. While not denying the importance of microbic infection and its transmissibility by sneezing, coughing, and so forth, he considers that "only those with pituitaries which are sensitive owing to habitual or transient vasomotor instability" will develop the disease. Dr. J. Barataux recommends, among other measures, the Chinese treatment called *Ko-kou*, which consists in thrusting a needle several millimetres deep into the dorsum of the hand between the thumb and index-finger. Which hand is not specified; nor is it stated whether the doctor's tongue should be in his cheek whilst carrying out this procedure. Many of the contributors regard prophylaxis as the better part of therapy. Thus, Dr. Carréga, of Marseilles, bids us avoid carriers—a counsel of perfection indeed. Dr. Labarrière would have us avoid draughts and cold feet, while Dr. Debidour believes in cold baths and in accustoming the body to cold, a belief shared by Drs. J. Tarneaud and J. Vialle. Again, while Dr. Vialle would "combat endocrine dysfunction," Dr. A. Soulas would "treat the general condition." Dr. Berger likes vaccines, and the correction of nasal deformities is supported by Drs. G. Toitot, A. Bloch, Soulas, and Tarneaud, all of whom, *mirabile dictu*, are oto-rhino-laryngologists. As to drugs, for both local and general use, their name is legion. Ephedrine, adrenaline (with or without storaine), aconite, belladonna, silver salts, magnesium chloride, and urotropine all have their champions. "Purge first" is the

advice of Drs. Jacques and Bloch. Dr. Rachewsky gives morphia; Dr. Jacod, opium. Quinine has two votes; the salicylates three. Menthol is curiously unpopular; Dr. Batier finds that it "provokes reactive congestion," and Drs. Debidour and Leroux-Robert that "it is a generator of laryngeal spasm." Diathermy, infra-red rays, and antiviral therapy are also mentioned. Dr. Leroux-Robert has heard of a way of aborting a cold by inhaling a mixture of equal parts of ammonia, tincture of iodine, carbolic acid and alcohol but "does not know the result of this method." It is with relief that we are able to record that none advocates the wearing of an iodine locket, the hanging of garlic outside the bedroom window, or the draping of the counterpane with a string of onions. After reading the symposium, we are forced to the conclusion that the treatment of the common cold is not one of the many things they order better in France.

OBSessional ILLNESS

PSYCHOPATHOLOGY has received much more attention of late years than any other aspect of neurosis; it has sometimes seemed as though no other aspect was thought deserving of attention. In a paper on the problem of obsessional illness, read before the psychiatric section of the Royal Society of Medicine on Dec. 10th, Dr. Aubrey Lewis indicated the wider range of questions raised by one of the typical neuroses. He pointed out that in the causation of the symptom it was usually possible to discover the mechanism determining the content of an obsession in any individual case, but that these mechanisms were not limited to obsessional illness nor characteristic of it. To go further, one might with the Freudians take certain unprovable premises—Freud had himself called the theory of instincts a mythology—but one could not at present elucidate the special psychopathology of this disorder otherwise than speculatively. The ways in which at various stages of life the obsessional tendencies had manifested themselves was an object of study which had been little pursued, especially in normal persons. The character usually described as obsessional was not infrequently found in those who developed other types of mental illness. The relationship of obsessional neurosis to melancholia and schizophrenia was a frequent observation, which had been little reckoned with. Still more complicated was the issue raised by the occurrence of obsessions after an attack of encephalitis lethargica in persons who had been free from any such traits beforehand. A purely psychological interpretation was here impossible; one had to consider the influence of motor disorders on the structure of the personality as well as the specific cerebral damage, though one would avoid crude efforts at localisation of function.

In any approach to the problem of causation, the psychiatrist is being pushed back to constitution, or, more strictly, heredity as the indispensable factor. In a detailed study of the families of 50 obsessional patients, Dr. Lewis found pronounced obsessional traits to be widespread among the parents and siblings; such data could not, however, be evaluated without comparable investigation of the average population and others. Twins would provide valuable information, but the number of cases was still too small. Prognosis and treatment are generally regarded with much gloom; nothing but psychoanalysis lasting for years can, in the opinion of some, do any permanent good. In order to find out what grounds there might be for such pessimism, Dr. Lewis took 50 patients from the records of the Maudsley

¹ *Vie méd.*, Oct. 25th, p. 891.

Hospital and pursued inquiries into their subsequent history, which covered from five to ten years. These patients were a fair sample of obsessionals taken at random; various forms of treatment, including intensive psychotherapy, had been used. Two of the patients had come only once to the hospital and had no subsequent treatment: one of them was now much worse, the other had been quite well for ten years. Half the patients had been well for five years or more; some others had been well for years but had had a recurrence from which again they recovered. The results did not prove any better outcome from one mode of treatment than from another: many factors entered into this, and in some cases it seemed clearly to be external circumstances that had effected a change. In one case, obsessional symptoms which had been very severe disappeared entirely during the war, to return afterwards. The findings did not indicate that psycho-analysis was the treatment of choice; in many instances it would have been superfluous and unwarranted.

For the prospect of recovery Dr. Lewis finds neither the content of the obsessions nor the patient's age to be the ruling factor. The likelihood of an obsessional patient carrying his impulses into action, and so coming into conflict with society, is small. Suicidal attempts happen because the patient is also depressed; they are seldom the expression of an uncontrollable obsessional impulse. Murder and sexual offences cannot be included in the category of obsessional actions; there were essential differences clinically and psychologically. In his concluding remarks Dr. Lewis emphasised the need for detailed clinical study if the problem of obsessional illness is to be solved.

INTERVAL BETWEEN PRIMARY AND LATER MANIFESTATIONS OF TUBERCULOSIS

Prof. Arvid Wallgren, whose studies of erythema nodosum and tuberculosis in Göteborg have been conducted over many years, has now, with Dr. A. Lundblom,¹ tried to estimate the average interval between the first manifestation of a tuberculous infection (erythema nodosum) and three later manifestations—namely, meningitis, pleurisy, and tuberculosis of the bones. Wallgren's earlier investigations have shown that the incubation period of tuberculosis—i.e., the interval between infection and the appearance of erythema nodosum—is between three and eight weeks, usually between five and six. In a series of 111 cases of serous pleurisy preceded by erythema nodosum it was found that the interval between the appearance of these two conditions was usually 3–6 months. In 64 cases of tuberculous meningitis preceded by erythema nodosum the interval between the two was usually less than three months. These observations suggest that the chances of erythema nodosum being followed by tuberculous meningitis diminish rapidly three months after the appearance of the erythema, and that the chances of pleurisy diminish after the sixth month. The child who develops tuberculous pleurisy as a sequel to erythema nodosum is, therefore, almost out of the wood so far as the chances of developing tuberculous meningitis are concerned. In support of this calculation it is noted that in a children's hospital in Göteborg, in which 400 children have been treated for pleurisy since 1922, only 2 have subsequently developed tuberculous meningitis. In cooperation with the staffs of other Swedish hospitals, Wallgren and

Lundblom have now extended their studies to tuberculosis of the bones; and in 115 such cases they find that the interval between the onset of erythema nodosum and the first signs of tuberculosis of the bones and joints was a year or less in about half, two years or less in about three-quarters, and under three years in almost all. In other words, the child who develops erythema nodosum is not likely to develop meningitis if he has not done so within three months, pleurisy if he has not done so within six months, or tuberculosis of the bones and joints if he has not done so within three years. The survey ends with a study of 2031 cases of tuberculosis of the bones and joints which shows that this condition usually comes on between the ages of 6 and 30, the highest rates being between the ages of 16 and 25 when the opportunities for infection are greatest.

JOHN WHITRIDGE WILLIAMS

"Ease, grace, and dignity were the symbols of his habitual self-control. He seemed to do as he liked without restraint, confusion, or awkwardness." Dr. Morris Slemons has chosen these words from Hazlitt's essay on the "Look of a Gentleman" to describe John Whitridge Williams, to whose work and personality he paid tribute in a presidential address to the Pacific Coast Society of Obstetrics and Gynecology on Nov. 9th. The lecture has now been published in book form,¹ and as the story of Williams's career as obstetrician and administrator is also the story of the department of obstetrics and of the introduction of a system of whole-time teachers at the Johns Hopkins Hospital, it has a general as well as a personal interest. Williams served the hospital for over 40 years, being appointed associate professor of obstetrics in 1896 and professor in 1899. He was twice offered high positions in other cities, but each time he was persuaded to remain, once by the establishment of obstetrics as a whole-time department and once by the founding of the Women's Clinic. At the Johns Hopkins Hospital circumstances had made the separation of obstetrics from gynaecology inevitable, but in an interesting discussion of the system Dr. Slemons makes it clear that Williams himself did not approve of it. A bibliography of Williams's writings up to his death in 1931 is supplied, and his work on the investigation of the problems of placentation, the funnel pelvis, and prenatal care is discussed in some detail.

THE NERVOUS FACTOR IN DECALCIFICATION

Mario Coppo² thinks that the possibility of a nervous control of calcium metabolism in bone has been too summarily dismissed—notably by Leriche and Policard. He himself believes that such control exists, and he visualises the responsible nerve-fibres as leaving the spinal cord by the lateral horns in company with others having a trophic function. He argues that such regulation of metabolism is in line with the nervous control already suggested for glycogen-glucose equilibrium, and for the trophic changes in muscular and adipose tissues. The factors predisposing to, or determining, decalcification of bone he divides into general and local. Under the former heading he lists such conditions as hyperparathyroidism, deficiency of vitamin D, obesity, and (doubtfully) acidosis. Under local causes he includes immobilisation and tuberculosis of bones and joints.

¹ John Whitridge Williams. Baltimore: The Johns Hopkins Press, 1935. Pp. 109. 7s.

² Paris méd., 1935, xxx., 110.

¹ Nord. med. tidskr., Oct. 26th, 1935, p. 1699.

Looking for a single underlying cause, Coppo finds it in the nervous factor: decalcification, in fact, he regards as a trophic phenomenon. In support of this he relates the results of experiments in which he estimated the mineral content of bone previously submitted *in situ* to the action of ischaemia, stasis, nerve section, immobilisation, and the proximity of an abscess. Nerve section, he says, led to definite and constant mineral loss within 10-15 days, whereas none of the other factors, operating over the same period, had any effect on the mineral content of the bone. The conclusion drawn is that the nervous factor is alone of importance, and that all other causes of decalcification act through their influence on the trophic nerves. This sweeping generalisation, however, will not be readily accepted; for there are reports by other workers to the contrary.

THE CALCULATION OF BASAL METABOLIC RATE

Dr. T. J. F. Frank, of Melbourne, has recently made an exhaustive and impartial investigation into the claims of three formulæ for the estimation of basal metabolic rate (B.M.R.) on the basis of pulse-rate and pulse-pressure values.¹ In 250 patients he has compared the result obtained from gasometric analysis with those calculated from the formulæ, and has shown that the latter are extremely inaccurate. The danger of using them for diagnostic purposes is emphasised by the inclusion of 43 patients who had complaints which left the basal metabolic rate unaffected, but which simulated thyroid disease in various ways. In 17 of these patients the calculated B.M.R. differed by more than 20 per cent. from the normal, and in some of them might well have led to a false diagnosis of hyperthyroidism and to surgical treatment. The remaining 207 patients mostly suffered from various forms of hyperthyroidism, but included 5 cases of hypothyroidism. Dr. Frank has tabulated his results according to the pathology of the complaints, and has regrouped them on the basis of the degree to which the B.M.R. (as measured gasometrically) was raised. In no group, classified by either of these methods, is there any striking agreement between the formulæ and gasometric determinations. The former are no safer in either slight or severe cases, whatever the basis of diagnosis. There is rather more to be said for the formulæ as giving comparative results in the same patient, and in some cases, if a preliminary gasometric determination is made simultaneously with pulse and blood-pressure readings so as to estimate the disparity between the two methods, the patient's progress may be followed roughly by periodic calculations from the formulæ. This is by no means always true, and the figures given for 6 cases followed by Dr. Frank are not encouraging. It may be contended that the gasometric method itself is not very accurate under clinical conditions, but the error here lies in the actual determination and can be minimised by employing an expert to make it and by insisting as rigorously as possible on the maintenance of basal conditions. The theory of the method is rational, and although it has not escaped criticism, notably by E. P. Poulton,² it is unlikely to be modified to an extent which would interfere with the usual interpretation of the results obtained in practice. The formulæ, on the other hand, are quite empirical and lack any theoretical background. Moreover, three measurements have to be made—pulse-rate, and

systolic and diastolic blood pressure—and each of these is subject to error. It is clear that the procedure as well as the theory of using such formulæ have very little to recommend it, and it is perhaps unfortunate that it is so easy to carry out. Dr. Frank, like most experienced clinicians, emphasises the importance of giving full value to clinical observations as well as to the basal metabolic rate in estimating the severity of thyroid disease.

INTERNATIONAL LEAGUE AGAINST EPILEPSY

DURING the International Neurological Congress held in London last summer a number of those particularly interested in epilepsy met at the Lingfield epileptic colony: 32 doctors representing 14 countries. After discussion it was unanimously decided to revive the International League against Epilepsy with a view of improving the social condition and institutional care of sufferers from epilepsy. It was agreed to issue a publication, annually or oftener, acquainting readers with facilities and with remedial efforts carried on in various countries. Plans were also laid for the league to meet during the next neurological congress in Copenhagen. At a later meeting, Prof. A. Ley of Brussels being in the chair, the following officers were elected: president, William G. Lennox, Boston, U.S.A.; treasurer, Tylor Fox, Lingfield, Surrey; secretaries, H. I. Schou, Dianalund, Denmark, and L. J. J. Muskens, Amsterdam. All who are interested in improving the condition of epileptics are invited to join the league. The membership fee, which includes subscription to the periodical, is the equivalent of 5s. a year, or 15s. for the four-year period.

RESPIRATORY DISEASE IN NEW-BORN INFANTS

ALTHOUGH pneumonia and atelectasis are generally recognised as important causes of death in the newly born, they have mostly been investigated from the pathological rather than the clinical standpoint. It is useful therefore to have Dr. W. S. Craig's account¹ of his observations in the Royal Maternity Hospital, Edinburgh, where he has made a study of all those infants showing disturbance of general health, and has correlated the clinical and pathological findings in 146 cases coming to autopsy. Radiography was not employed, so that the conditions correspond to those of ordinary practice. In 60 cases no signs of pulmonary disease were found on physical examination; at autopsy, the lungs appeared normal in 52 of these, while 8 showed extensive atelectasis. Consolidation was diagnosed clinically in 50; of these, 28 showed pneumonia, 8 pneumonia with hæmorrhage, 12 hæmorrhage without inflammatory changes, and 2 pleurisy without pneumonia. Atelectasis was diagnosed in 24, and was found in uncomplicated form in 20 of them, in 1 where consolidation had been suspected, and in the 8 cases already mentioned, in which no physical signs had been found. Uncomplicated bronchitis was present in only 4. Analysing the clinical findings, Craig first groups together those cases in which pneumonia or hæmorrhage, or both, produced consolidation. In these he found that the most common sign was cyanosis, which was not so deep as that due to subdural hæmorrhage and responded more readily to oxygen administration. Feebleness at birth, or shortly afterwards, due to prematurity or difficult delivery was noted in the majority. Cough was rare, and the *aké nasi* were only seen in action shortly

¹ Med. Jour. Austral., Sept. 30th, 1935, p. 397.

² See THE LANCET, 1934, I, 197.

before death. The temperature chart was not typical, the temperature being irregularly raised or subnormal. Respiration was rapid, at first deep and subsequently shallow, and sometimes there was retraction of the intercostal or upper abdominal muscles during inspiration. Percussion of the chest was seldom of any help in diagnosing consolidation and the breath sounds were not typically bronchial. Crepitations, however, were constantly present, and were sharp and crackling, localised at the bases or in the axillæ and heard only at the end of inspiration. The physical signs in the cases where bronchitis was later found at autopsy were similar to those noted in cases of consolidation, except that cyanosis was always present and cough commoner; rhonchi and coarse bubbling râles were heard on auscultation. There were 8 recoveries among cases in which bronchitis was diagnosed. Atelectasis was characterised clinically by general limpness, a tendency for the temperature to be subnormal, a variable tinge of cyanosis uninfluenced by oxygen administration, and rapidity but no embarrassment of respiration. The physical signs were less definite than in other conditions described, the breath sounds being distant and often jerky, with no accompaniments. Craig emphasises the tendency for respiratory disease to occur in premature and asphyxiated infants, and its frequent association with intracranial hemorrhage. The speed with which pneumonia proves fatal in the newly born is shown by his figures: of the 56 cases with consolidation, 51 died within three days and 2 within six days of the condition being recognised.

HEMOLYTIC ANÆMIAS

"HEMOLYTIC anæmia appears in many guises: between acholuric jaundice and the acute type described by Lederer we may recognise an ascending series of anæmias." These are the opening words of an instructive paper by Dr. J. L. Lovibond which we publish this week. How far, it may be asked, is his conception of hemolytic anæmias valuable in practice? Acholuric jaundice is a clearly defined clinical and pathological entity. It is a hereditary condition characterised by increased spherocytosis, reticulocytosis, and fragility of the red cells associated with splenomegaly and a positive indirect van den Bergh reaction. These abnormalities may give rise to no symptoms, being recognised only when a careful examination is made, or they may result in either a chronic or acute form of anæmia. The acute hemolytic anæmia of Lederer, on the other hand, presents a very ill-defined clinical and pathological picture. Before casting aside the diagnosis of a definite disease such as acholuric jaundice for an indefinite condition like "acute hemolytic anæmia," it is essential that in any particular case red cell fragility determinations should be made by an accurate quantitative technique both upon the patient's blood and upon that of his relations though they claim to have excellent health. A survey of recently reported cases suggests that if such investigations are carried out acholuric jaundice is the final diagnosis (Scott,¹ Murray-Lyon²). Four cases described by Joules and Masterman³ cannot be accepted as proved not to have acholuric jaundice; other members of the family were not examined and in at least one patient fragility was increased. Since Doan, Curtis, and Wiseman⁴ have brought forward

conclusive evidence that splenectomy is indicated even in acute cases of acholuric jaundice, the necessity of making an accurate diagnosis in hemolytic anæmias is not only of academic but also of immediate practical importance.

A FOOD POLICY

THE report drawn up by the Expert Commission on Nutrition, which met in London under the chairmanship of Prof. Edward Mellanby last month, has now been issued, and we are able to reproduce its essential features on a later page. The report is itself a landmark, but it is only the first stage of the Commission's work. Since the general principles laid down in it are to be applied in different countries and must therefore be adapted to varying conditions of population, customs, and social life, the report is now to be communicated for study to representative scientific institutions in those countries. They in turn will collect advice from technical experts—clinicians, pædiatricians, school medical officers, and the like—and this advice will be analysed and summarised by the Commission and will then be placed at the disposal of a special committee appointed by the League of Nations Council. In this country the advisory body is the Medical Research Council, in the U.S.A. the National Research Council, and in France the Academy of Medicine. In the meanwhile all who are interested in the initiation of a comprehensive national food policy will study the report and, if they are wise, supplement this study by reading the remarkable survey issued¹ in the summer by Dr. E. Burnet and Dr. W. R. Aykroyd, two officers of the League's Health Organisation.

WE regret to announce the death last Monday of Mr. Frank Chetwode Crawley, formerly President of the Royal College of Surgeons in Ireland.

WHO'S WHO for 1936 contains some 40,000 biographies of men and women of the time arranged in convenient form and, for the most part at all events, certified by their eponyms. This is the 88th year of issue of a book of reference which becomes every year more indispensable. Those who would save themselves trouble and anxiety will also procure the two companion volumes, "Who was Who," 1897-1915 and 1916-1928. Year by year names drop out of "Who's Who" on account of death; when details of these biographies are afterwards required much search may be needed unless the actual year of death is known. The prices of the volumes are I., 60s., and II. and III., 21s. each, from Messrs. A. and C. Black Ltd.

MR. FRED BUTTERFIELD, who died in London on Dec. 14th at the age of 67 years, had been for more than forty years secretary of the Incorporated Dental Society. When the Dental Board of the United Kingdom was set up in 1921 Mr. Butterfield was appointed by the Privy Council to represent the practising dentists registered under the 1921 Act without diploma, and three years later he was elected to the Board by the free vote of these dentists. On the Dental Board he did all he could to further the interests of the dental practitioner and he served on four of its committees, including the discipline committee and the education committee. His colleague, Mr. W. L. Edwards, representing dental practitioners, died suddenly in April of this year.

¹ Scott, A. M.: THE LANCET, Oct. 19th, 1935, p. 572.

² Murray-Lyon, R. M.: Brit. Med. Jour., 1935, I., 59.

³ Joules, H., and Masterman, L. M.: Ibid., 1935, II., 150.

⁴ Doan, C. A., Curtis, G. M., and Wiseman, B. R.: Jour. Amer. Med. Assoc., Nov. 16th, 1935, p. 1567.

¹ Quart. Bull., Health Organ., League of Nations, June, 1935.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXXI.—PROGNOSIS IN MALIGNANT GROWTHS OF THE TESTICLE

VARIOUS classifications and descriptions of malignant growths of the testicle have at times been given and the subject has led to a good deal of controversy. For clinical purposes however, it is sufficient to divide them into two big classes: (1) seminomas or spermatocytomas arising from differentiated germinal epithelium, and (2) embryomas or teratomas arising from undifferentiated germ cells. No further subdivision of the seminomas is necessary, but embryomas or teratomas can be again separated according to their gross or microscopic characteristics, into dermoids, mixed tumours, chorionic carcinomas, and the various types of carcinoma and sarcoma which may be developed within a pre-existing teratoma. From the clinical point of view it may be said that the chief points which distinguish the seminoma from the teratomatous tumours are that the former develop at a later period of life and do not so readily form metastases. The prognosis is therefore better in the case of a seminoma than in that of a teratoma.

Although the outlook is slightly better for a patient who has developed a seminoma than for one who has a teratoma, it must be realised that all malignant growths of the testicle have a high degree of malignancy. The prognosis will therefore depend on the date at which the trouble is discovered and the completeness of the measures taken for its eradication. It is an unfortunate fact that because malignant growths of the testicle are comparatively rare (Russell Howard found 65 cases in 110,000 male cases admitted to the London Hospital) a new growth is seldom suspected before the risk of dissemination has occurred. For this reason L. Chevassu, who has had a unique experience in the treatment of malignant testicle, urges that the organ should be explored under an anæsthetic whenever a hard area has been detected in a testis that otherwise appears to be normal. The earliest sign that may be discovered at such an exploration is an unusual vascularisation of the tunica albuginea in the region of the induration, and this alone should be sufficient in the absence of any explanation to entail immediate orchidectomy.

Experience has definitely proved that simple orchidectomy fails as a means of cure. Chevassu collected statistics from 100 cases in which removal of the testicle alone had been performed and found 19 cures and 81 deaths. Of the 19 cures, 13 were alive and well from 4-7 years and 6 from 7-10 years after operation. Of the 81 who died 47 per cent. were dead within a year of operation. Simple orchidectomy is even more irrational than simple removal of the breast in mammary carcinoma, since the lymphatic spread is more rapid in the case of malignant disease of the testicle than in that of malignant disease of the breast. As a supplementary measure to orchidectomy two means of dealing with secondary deposits are possible: (1) removal of the testicle together with the whole of the lymphatic field as far up as the renal veins, and (2) orchidectomy followed by deep X ray therapy.

ORCHIDECTOMY WITH SURGICAL EXTIRPATION OF THE LYMPHATIC FIELD

The operation is a severe one and carries with it a definite operative mortality that is probably in the region of 10 per cent. Frank Hinman (1935), in report-

ing on 9 cases in which he carried out removal of the testicle, together with its lymphatic field, states that amongst the 8 who survived operation 2 died of metastases at 9 and 18 months respectively, and another at 4½ years. H. H. Young (1926) states that in another 8 cases, 4 survived, one being alive 9 years later, one 4½ years, and 2 one year after operation. Of the 4 who did not survive even for so long a period as a year, 3 died with regional metastases.

ORCHIDECTOMY AND DEEP X RAY THERAPY

Deep X ray therapy may be begun a week or ten days after the operation or the testicle may be irradiated before its removal. According to most authorities the latter plan is preferable, since it reduces the chances of malignant cells being liberated at the time of operation. As, however, in many cases the diagnosis can only be confirmed by exploration, X ray therapy is more commonly carried out as a secondary procedure. A. L. Dean, reporting on teratoid tumours of the testis treated by X rays of high voltage, states that out of 7 patients with operable tumours 5 remained free from all signs of disease, whilst of the 49 patients who were first seen with inoperable metastases, only 5 were free from signs of disease after treatment. In his opinion pre-operative irradiation of the primary tumour is highly desirable, his results showing a much lower mortality in patients so treated. Although the number of cases treated by orchidectomy and deep X ray therapy in my practice has been small, I am able to report patients living free from recurrence at the end of 8, 7, 6, 3, and 2 years respectively. In one of these there already existed a large mass in the left hypochondrium when X ray treatment was started. This mass rapidly disappeared a few weeks after Dr. N. S. Finzi had instituted treatment, and the patient remains alive and well six years later. Dr. Finzi has reported to me that he treated a case of malignant testicle with a secondary mass in front of the rectum 25 years ago, and that he believes this patient to be alive at the present time. But in spite of these successes with secondary deposits, it is an undoubted fact that the prognosis is always better when deep X ray therapy is started before secondary lesions are apparent. The prognosis of later recurrences occurring subsequent to the deep X ray therapy is undoubtedly bad, such recurrences proving to be more radio-resistant than those that may previously have been dealt with.

Although surgeons have not yet reached unanimity on the subject, the majority are of the opinion that the results of deep X ray therapy are better than those obtained from surgical extirpation of the lymphatic field, and H. Cairns has even gone so far as to state that after an analysis of 43 cases in which simple orchidectomy was performed and of 17 who were subjected to the radical operation, it seems to him questionable whether the latter offered enough to justify the risk it entailed.

SUMMARY.—The prognosis of malignant disease of the testicle may therefore be said to depend on the following factors: (1) histological characteristics of the growth; (2) date at which it is discovered; (3) the presence or absence of secondary deposits; (4) the intensity and thoroughness of the X ray treatment.

KENNETH M. WALKER, F.R.C.S.,

Surgeon to the Genito-urinary Department, Royal Northern Hospital; Surgeon to St. Paul's Hospital.

SPECIAL ARTICLES

GENERAL MEDICAL COUNCIL

WINTER SESSION, NOV. 26TH-DEC. 3RD

SECOND REPORT FROM THE CURRICULUM COMMITTEE

THE Curriculum Committee, G.M.C., was appointed in June, 1934, to consider the information and proposals received in respect of the revision of the curriculum. This committee, of which Dr. H. L. Tidy is the chairman, reported to the Council on May 31st, 1935, and it was resolved that the documents should be circulated to the licensing bodies and the deans of the medical schools for their observations, when the whole matter would be further considered at the next November session. A full abstract of the recommendations forming the first or interim report was published in our columns, the resolutions being given verbatim (see THE LANCET, June 15th, 1935, p. 1403).

A second interim report was received by the G.M.C. at its recent winter session, and in this document the provisional views of the Curriculum Committee on the important points are set out, with the alterations in accordance with suggestions received. It will be convenient to readers to have before them the text of the later report, although so much of it has been substantially published in our columns recently. The alterations are printed in italics. It is recommended that every student should be registered at the commencement of his studies in the Medical Students' Register.

I.—Pre-Registration Examinations

Before registration as a student or commencement of the medical curriculum proper every person shall be required to pass, in addition to an approved preliminary examination in general education, an examination or examinations conducted or recognised by one of the licensing bodies, and comprising the following subjects:—

1. One or two subjects of general education at an approved standard.

2. Chemistry (theoretical and practical), the elementary principles of the chemical combination of elements, including carbon.

3. Physics (theoretical and practical), the elementary mechanics of solids and fluids, the elements of heat, light, sound, electricity, and magnetism.

4. *Elements of General Biology: A course of instruction, including practical work, in the fundamental facts of vegetable and animal structure, life-history, and function; and an introduction to the study of embryology.*

The examination in the subject of biology may be taken after registration as a student in the period of study of the professional scientific subjects.

II.—Medical Curriculum

With regard to the course of study and examinations which persons desirous of qualifying for the medical profession shall go through in order that they may become possessed of the knowledge and skill requisite for the efficient practice of medicine, surgery, and midwifery, the Council recommend as follows, viz.:—

The period of professional study, between the date of registration as a medical student and the date of the final examination for any diploma which entitles its holder to be registered under the Medical Acts, should be a period of certified study during not less than five academic years.

The first two years should be devoted to the study of professional scientific subjects with an intro-

duction to clinical subjects. The last three years should be devoted to the study of the clinical subjects together with the clinical application of the professional scientific subjects.

Throughout the whole period of study, the attention of the student should be directed by his teachers (a) to the importance of the measures by which normal health may be assessed and maintained, and (b) to the principles and practice of the prevention of disease.

In every course of professional study, and in the examinations, the following subjects should be included:—

A.—PERIOD OF STUDY OF THE PROFESSIONAL SCIENTIFIC SUBJECTS (FIRST AND SECOND YEARS)

1. Human Anatomy and Human Physiology: These courses should include:—

- (1) Dissection of the entire cadaver.
- (2) Anatomy of the living body.
- (3) Elements of human embryology.
- (4) *Histology, the elements of cytology.*
- (5) *The elements of genetics.*

NOTE.—This subject may be taken with Biology.

(6) The principles of general physiology, the chemistry and physics of bodily functions studied as far as possible in the human subject.

(7) *Instruction in normal reactions of the body to injury and infection as an introduction to general pathology and bacteriology.*

(8) Elements of normal psychology.

Instruction, illustrative of that given in anatomy and physiology and introductory to later studies, should be given in the second year in the following subjects, the amount of time to be allotted to them not to exceed one-third of the total time available in that year:—

2. Elements of the Methods of Clinical Examination, including physical signs, the use of the stethoscope, ophthalmoscope, &c., and the examination of body fluids (with demonstrations on living subjects, normal and abnormal).

3. An Introduction to Pharmacology.

NOTE.—It is recommended that students should not pass to the period of clinical studies until they have satisfied the examiners in the subjects of the first and second years.

B.—PERIOD OF CLINICAL STUDIES

This period occupies the third, fourth, and fifth years of the medical curriculum proper. These should be calendar years, during which clinical instruction should be continuous.

A minimum period of three years should in every case be given to clinical study in an approved hospital after the completion by the student of the professional examinations held at the close of the second year of the medical curriculum proper.

4. Medicine, including:—

(1) Systematic instruction in the principles and practice of medicine.

(2) A medical clinical clerkship in the hospital wards for a period of six months.

(3) A continuous period of not less than one month in residence in hospital or conveniently nearby, attached to medical wards.

(4) A clinical clerkship for a period of not less than one month in a children's ward or hospital.

(5) Regular attendance in a medical out-patient or equivalent department for a period of three months.

(6) *Regular instruction and demonstrations in applied anatomy and physiology during the period of clinical studies, to be carried out as arranged by the teachers of anatomy and physiology and of the clinical subjects.*

(7) Instruction in methods of treatment, including: (a) dietetics; (b) therapeutics and prescribing; (c) physiotherapy; (d) principles of nursing.

(8) Instruction in the following branches of medicine: (a) disease in infancy and childhood, and child welfare; (b) acute infectious diseases; (c) tuberculosis; (d) *psychology and mental disease and*

deficiency; (e) diseases of the skin; (f) radiology in its application to medicine; (g) theory and practice of vaccination.

NOTE.—Instruction in these branches of medicine should be directed to the attainment of sufficient knowledge to ensure familiarity with common conditions, their recognition and treatment.

5. Surgery, including:—

(1) Systematic instruction in the principles and practice of surgery.

(2) A surgical dressership in the hospital wards for a period of six months.

NOTE.—During his period of surgical dressership a student should spend the greater part of his time at the bedside and in the out-patient department; and he should not be required to attend in the operating theatre unnecessarily.

(3) A continuous period of not less than one month in residence in hospital or conveniently nearby, attached to surgical wards.

(4) Regular attendance in a surgical out-patient or equivalent department for a period of three months.

(5) Practical instruction in surgical methods, including physiotherapy.

(6) Practical instruction in minor operative surgery on the living.

(7) Instruction in the administration of anaesthetics, the candidate being certified to have administered anaesthetics on at least ten occasions.

(8) A course of instruction in operative surgery.

(9) *Regular instruction and demonstrations in applied anatomy and physiology during the period of clinical studies, to be carried out as arranged by the teachers of anatomy and physiology and of the clinical subjects.*

(10) Instruction in the following branches of surgery: (a) disease in infancy and childhood; (b) diseases of the eye and principles of refraction; (c) diseases of the ear, nose and throat; (d) radiology in its application to surgery; (e) venereal diseases; (f) orthopaedics; (g) dental diseases.

NOTE.—Instruction in these branches of surgery should be directed to the attainment of sufficient knowledge to ensure familiarity with common conditions, their recognition and treatment.

6. Midwifery, Infant Hygiene and Diseases of Women, including:—

(1) Systematic instruction in the principles and practice of midwifery and gynaecology, including the applied anatomy and physiology of pregnancy and labour.

(2) Lectures and demonstrations in clinical midwifery, infant hygiene and gynaecology, and attendance on the practice of a maternity hospital or of the maternity ward of a general hospital, and on in-patient and out-patient gynaecological practice, for a period of six months, this period to be subsequent to the medical clinical clerkship (paragraph 4 (2)) and the surgical dressership (paragraph 5 (2)).

During this period the hours of clinical instruction should be so allotted that at least two-thirds are given to midwifery, including antenatal care and the hygiene of infants.

(3) Of this period of clinical instruction not less than two months should be spent as a resident pupil either in a maternity hospital, or in a hostel attached to a maternity hospital or the maternity wards of a general hospital, and these two months should be devoted exclusively to instruction in midwifery and in the hygiene of infants. *The student should during these two months attend at least twenty cases of labour under proper supervision.*

(4) Throughout the six months the student should receive practical instruction in the wards and out-patient department of the maternity hospital in the principles of: (a) antenatal and postnatal care; (b) the management of the puerperium; (c) the care of the new-born infant.

A certificate of having attended twenty cases of labour should be signed by a responsible medical officer on the staff of the hospital, and should state:—

(i) That the student has personally attended each case during the course of labour, making the necessary abdominal and other examinations under the supervision of the certifying officer, who should describe his official position;

(ii) That the first five at least of the twenty cases were delivered by the student in the lying-in hospital or ward;

(iii) That satisfactory written histories of the cases attended, including when possible antenatal and postnatal observations, were presented by the student and initialed by the supervising officer.

7. *Pathology and Bacteriology: Courses of instruction throughout the period of clinical studies in (1) general and special pathology (functional and structural) and morbid anatomy; (2) clinical and chemical pathology; (3) general and clinical bacteriology; and (4) immunology and immunisation.*

Each student should be required to have received practical instruction in the conduct of autopsies, and to have acted as a post-mortem clerk in at least ten cases.

8. A Course in Pharmacology and Materia Medica, including practical pharmacy.

9. Hygiene and Public Health.—Instruction in these subjects should be given during the later stages of the period of clinical studies.

10. Forensic Medicine.—Instruction in this subject and its application to practice should be given during the later stages of the period of clinical studies.

11. Legal and Ethical Obligations of Registered Medical Practitioners.—Instruction should be given during the later stages of the period of clinical studies, by some person having practical knowledge of the subject, on the statutory obligations of registered medical practitioners under the National Health Insurance Acts and other Acts of Parliament, and on the principles of medical ethics. Attention should be called to all notices on these subjects issued by the General Medical Council.

Penal Cases

(Concluded from p. 1366)

A CHARGE OF ADULTERY

The Case of David Edward Stanford Park, registered as of Erinvile, Higher Polsham-road, Paignton, M.B., Ch.B. 1903, U. Edin., who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner you abused your position by committing adultery with a Miss Monica Mary Magdalen Blount, a patient at Bay Mount Home, Paignton, Devon, of which you were the manager and medical officer, of which adultery you were found guilty by the decree of the Probate, Divorce, and Admiralty Division (Divorce) of the High Court of Justice, dated Oct. 30th, 1934, and made absolute on May 7th, 1935, in the case of *Park, Edna Leo v. Park, David Edward Stanford*, in which you were the respondent. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The complainant was Mrs. Edna Leo Park.

Respondent was represented by Mr. O. Hempson, on behalf of the Medical Defence Union, who put in a certificate stating Dr. Park's physical unfitness to attend and expressing fear of the harm that further postponement might do to his health.

Mr. Winterbottom laid the facts before the Council and called Mrs. Park. She testified to her statutory declaration, setting out the facts of the divorce and of the management of the Bay Mount Home for inebriates. As secretary to the company she had dealt with the admission of Miss Blount as a patient. Neither she nor her husband had heard of Miss Blount before. The patient had improved, but had written later that she had relapsed with "nerves." Respondent had gone to see her and thereafter had changed in his manner and ceased to give complainant her usual allowance. Later Miss Blount had returned to the home with jaundice and had been treated professionally by Dr. Park. Suspicion had then arisen, and later—also as secretary to the company—

complainant had opened a letter confirming her suspicions. Respondent had confessed and complainant had forthwith left. Miss Blount had later gone to the home, ostensibly as secretary, and had died at the home in January, 1934, leaving all her property to Dr. Park.

Complainant said she had not been asked to accompany her husband on his holiday; she had never refused to go. It had been agreed long before that one of them should look after the business. She had given up her social life to be with him and look after the home and the patients. She had been too shocked and agitated to think of spite, and had shown the letter to the sister and to Dr. Park's mother and their daughter. No one else had seen it. He had always been delicate and asthmatic. He had gone about the town publicly with Miss Blount.

Cross-examined by Mr. Hempson, she said she had left her husband in August, 1932, and the petition had been served in 1934, very shortly before Miss Blount's death. She did not know that Miss Blount had had to be propped up in bed and her hand guided to sign the receipt for service. She knew Miss Blount was ill, but had asked her solicitor too late not to serve the petition. The delay in commencing the proceedings had been due to attempts to get maintenance. She had not accepted his offers. The order for alimony was considerably less than he had offered, which had been £14 a month as long as Bay Mount was running. The order had been for £1 a month. It had, she admitted, been one fight for money from start to finish. If threat of proceedings before the Council had been held over his head time and time again to enforce maintenance, she did not know of it.

The Legal Assessor pointed out that the only issue before the Council was that of professional relationship.

Continuing, she agreed that her husband's professional work had been confined to the home. It was not true to say that her husband had had no part in the second visit of Miss Blount; or to say that Miss Blount had asked to come as a guest and not as a patient. Miss Blount had not occupied the same room on the second occasion. Witness did not know what she paid then. She remembered seeing her husband make out the bill. Miss Blount had paid 7½ guineas a week the first time. She had been treated for jaundice on the second visit. No other doctor had attended her. She had arrived with a temperature and had gone to bed and been dieted and treated. Witness knew nothing about Miss Blount's arrangements or reasons for coming. She did not suggest adultery during this visit. She had heard that Miss Blount was ill for nearly twelve months, but her husband had been no worse than he had always been.

In reply to the Legal Assessor, witness said that in Miss Blount's letter to her nothing had been said about coming as a patient on the second visit. It had not usually been her duty as secretary to the company to make out the bills: this had been done by her or her husband. It was a limited company and the accounts had been audited. Receipts had been issued by her and her husband and he had fixed the charges without consulting her. The charges had been inclusive of medical attendance.

Mr. Winterbottom read out Miss Blount's will and probate thereof.

Dr. A. R. Pocock said that Miss Blount was his patient for a long time and he had advised her to go to Bay Mount the first time. She had returned practically well. She had later told witness that

Dr. Park had asked her to go again as a guest although she was quite well. He had said "As a patient?" and she had replied "Certainly not." She had had no jaundice to his knowledge, and no other reason for medical treatment.

In reply to Mr. Winterbottom, he said he had seen Miss Blount within a week or two of her departure for Paignton in 1932. He had clearly understood that she would not be paying a fee.

In reply to the Legal Assessor, he said he had often prescribed for her, but not immediately before this visit. She had nearly always had nux vomica and an alkaline mixture.

In reply to members, he said he had written to Dr. Park on the first occasion only but certainly not the second time. He had sent several cases to the home, which took convalescents as well as acute cases.

Mr. Hempson read Dr. Park's statutory declaration and a letter amending it. He admitted dispensing medicine prescribed by her usual medical attendant for Miss Blount during the second visit, when she was convalescent after jaundice. He denied any other medical attendance. The association had then been perfectly proper. Having to pass through London he had arranged to meet her at Paddington, and on the spur of the moment they had spent three days together. The association had then been ended, but Miss Blount had written one letter to him, which had been opened by his wife. The complainant had triumphantly informed the whole neighbourhood. He maintained that he had not abused the professional relationship, which had ceased in May, 1932, when she left Bay Mount and he had never anticipated seeing her again. His wife had threatened to leave him in January, 1932, and had made his life a misery long before he ever met Miss Blount.

Mr. Hempson then addressed the Council, emphasising that Miss Blount had had her own medical attendant all the time and had only been referred to Dr. Park for special treatment for one thing. The case did not present the fundamental factor of privileged admission to the patient's house at any hour or in any circumstances. There had been complete severance of the relationship and no foundation for the subsequent association, which dated from his wife's letter suggesting he should go and see her and take her out. Respondent was broken in health, spirit, and pocket, and his only hope of eking out an existence was to take a few patients well enough to come to him.

Mr. Winterbottom addressed the Council, and after deliberation in camera the President announced that the facts had been found proved and the Registrar had been directed to erase Dr. Park's name from the Register.

ALLEGED CANVASSING

The Case of John Alexander McKinnon, registered as of Claremont, Upper High-street, Thame, Oxon., L., L.M. 1916, R.C.P. Irel.; L., L.M. 1916, R.C.S. Irel., who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner you canvassed in or about the month of February, 1935, for the purpose of obtaining patients in respect of your practice as a registered medical practitioner carried on by you at Thame, Oxford: (1) By circulating, or acquiescing in the circulation of, a leaflet headed "To the Residents of Tetworth and District," convening a meeting to be held on Feb. 18th, 1935, at the British Legion Club, Tetworth, to enrol members of a doctor's club, in which it was stated that "The Doctor" (yourself) "with whom arrangements

have been completed, will attend this meeting"; (2) by acquiescing in the calling of and/or agreeing to attend a meeting of the local residents with a view to the formation amongst them of a medical club of which you were to be the sole medical officer; (3) by employing, or sanctioning the employment of, an agent or canvasser who attended the said meeting and invited the persons present and others to become patients of yours by joining the doctor's club. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The complainants were the Medical Defence Union, for whom Mr. O. Hempson appeared. Dr. McKinnon was represented by Mr. T. Carthew, counsel, instructed by Messrs. Le Brasseur and Oakley, solicitors to the London and Counties Medical Protection Society. Mr. Hempson said that respondent had set up in Thame without purchasing any practice; such a man had to be particularly careful what he did, as it was to be presumed that all residents already had their own doctor. The formation of a club was unobjectionable, but it was objectionable in the extreme to canvass a club of which one doctor only was medical officer. Mr. Hempson read a letter from respondent's solicitors which he characterised as an admission of the charges.

Mr. J. C. Everett, solicitor, testified to his statutory declaration in which he stated that he had seen a handbill, and in consequence had attended a meeting called by Mr. Crump, secretary to the local branch of the British Legion. Respondent had opened the door of the hall. Mr. Crump had spoken to him and left the hall, shortly returning to address the meeting. He said "they" had spoken to the doctor (respondent) about it and fixed subscriptions. The doctor had had nothing to do with calling the meeting, but had intended to be present; he had, however, been called to an urgent case and hoped to return.

In answer to Mr. Carthew, witness agreed that he had gone there on the instructions of a local doctor to see what went on. The substance of his declaration had been written down by him immediately after the meeting. He did not remember if Mr. Crump had said the meeting was to discuss the possibility of forming a club, and that subscriptions to the club would not affect payments to the Radcliffe Infirmary.

Mr. T. W. Ludgate, clerk to Mr. Everett, testified to his statutory declaration and said that respondent had attended the meeting in question. Cross-examined by Mr. Carthew, he thought Mr. Crump had said "with a view to forming" the club, and did not think he had said people were not being pressed to leave their own doctors.

Mr. W. F. Small, gardener in the employ of a local doctor, had attended the meeting on his master's instructions and in consequence of a handbill. He gave a similar account of what had been said. Cross-examined, he said he had written the declaration in the doctor's surgery, with his help. He could not explain a difference between his own rough notes made at the time and his statutory declaration; the former said "proposed to start" a club, and the latter said "call to enrol members." He supposed that his employer had suggested the words.

Mr. Hempson read a statutory declaration from the chairman of the local branch of the British Legion disclaiming the meeting and saying the Legion knew nothing of the club.

Dr. McKinnon, examined by Mr. Carthew, said he practised at Thame and had just taken a partner. He was a member of the British Legion. Mr. Crump was secretary of the Tetsworth branch and a patient of his, and had approached him, asking if he could

do something for the poorer members of the Legion. There had been a club in the district before. He had not agreed to be the doctor, and it was left to Mr. Crump to let him know details of what was wanted. He had never run a club. He had agreed to go to the meeting to discuss possibilities. He had first seen the leaflet when solicitors sent it him many months later; he had had no knowledge what steps Crump was taking and had no idea there was a handbill. On the day of the meeting he had gone to the Legion Hall about 3.30 p.m. and Crump had come out to him and had a conversation. Respondent had then returned to Thame. Crump had had no authority to say he had agreed to accept club members as his patients; he had never promised to do that. Arrangements had never even been discussed. He had never seen the letter sent by his solicitors to the Registrar.

Mr. Hempson cross-examined respondent, who said he disagreed with the letter of his solicitors. He had said he was prepared to act as medical adviser to the club if in the event it proved agreeable to him. When he had called Crump out he had asked if it was a public meeting, and on hearing that it was had said he could have nothing to do with it as the procedure was quite wrong, and he had made it perfectly clear that he would have no more to do with it. It was not true that he had been prepared to go on until he heard of the circulars.

Mr. Carthew re-examined, and then called Mr. Crump, secretary to the Tetsworth branch of the British Legion. He testified that up to January, 1934, there had been a Legion club but then its doctor had notified members that he was not going on. Witness had been very anxious to start another club because so many poor people could not afford a doctor. He had spoken about it to Dr. McKinnon during January, and the doctor had replied that he was willing, but nothing definite had been settled. He himself had composed and ordered and paid for the handbills. The doctor had had nothing whatever to do with them, and did not know they were being ordered. He had told Dr. McKinnon of the time and place of the meeting. He had put "with whom arrangements had been completed" on the circular because he thought everything would be all right. He took full responsibility for the handbill, which he sent out to all members of the Legion and the club run by it. Fifty had been printed, but a few had been left over. The work was done through the benevolent committee which was nothing to do with the chairman of the local branch. He had explained at the meeting that the club subscription would not interfere with existing hospital payment schemes and had tried to explain that the club was only for those who were too poor to afford a doctor.

Cross-examined by Mr. Hempson, witness agreed he had been disappointed that Dr. McKinnon could not attend the meeting. He had not discussed fees with the doctor.

Mr. Carthew, addressing the Council, argued that Mr. Crump had been solely responsible for the circular. Respondent had agreed to attend a meeting but had thought it was a committee meeting of the Legion. When he arrived and saw the nature of the meeting he had made an excuse and gone away.

Mr. Hempson emphasised a direct conflict of evidence between respondent and Mr. Crump. He did not accept Dr. McKinnon "as the fool he appeared in the box" or as an honest witness. The meeting, in his opinion, had been called with the knowledge and approval of respondent.

After deliberation in camera the President announced that the facts in the preamble and in para. (2) and (3) of the charge had been found proved, but not the fact in para. (1). The methods were contrary to the public interest and profession of medicine, but judgment had been postponed until November, 1936, with the usual provisos.

Restorations after Non-Penal Removal

At the meeting of the executive committee preceding the Council meeting the names of the following persons had, on fulfilment in each case of the prescribed conditions, been restored to the Register, from which they had been erased under Section 14 of the Medical Act, 1858:—

Bushe, Joseph B. (S).	McCullough, William W. (I).
Campbell, James McN. (S).	McElroy, William (S).
Clarke, John J.	Melrose, Thomas R. G. (S).
Cresswell, Norman (I).	Pasco, Bernard C. W.
Dyet, (Mrs.) Mary E. (S).	Phillips, Lionel L.
Evison, Frank A.	Rankin, Reginald J.
Jones, William E.	Sleigh, George B. (S).
Kenealy, Arabella M.	Smith, Alistair H. (S).
Lloyd, John T.	Thistlethwaite, Eleanor C. (S).

The letter (S) or (I) after a name indicates that the name was sent for restoration by the registrar of the branch council for Scotland or of the branch council for Ireland.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

PREGNANCY WASTAGE

HITHERTO only rough estimates of the number of abortions in the United States have been available and even these have lacked any attempt to distinguish between legal and illegal abortions. A basis for more exact study has been found by Dr. Regine K. Stix of the Milbank Memorial Fund in the records of birth control clinics. In this confidential haven of the overly pregnant accurate histories have been recorded. Of the 991 women whose records were studied two-thirds were Jewish, one-sixth Catholic, and the remainder Protestant. Half of the women were foreign-born. The total number of pregnancies was 3106, of which only 35 were due to premarital intercourse. Seventy per cent. of the pregnancies terminated in live births, 20 per cent. in illegal abortions, and the remaining 10 per cent. in spontaneous abortions, therapeutic abortions, ectopic pregnancies, or stillbirths. A smaller proportion of Catholic pregnancies were aborted than of Jewish pregnancies; not that the Catholic women resorted less frequently to abortion, but they became pregnant more frequently than the Jews. Six per cent. of the Jews and 11 per cent. of the Catholics had experienced three or more illegal abortions. Dr. Stix is careful to point out that since all the histories were compiled in a birth control clinic the women may not be truly representative of their religious groups.

The proportion of pregnancies terminating in live births declined rapidly with length of marriage. Less than one-fifth of first pregnancies were accidental, but of the conceptions occurring in the period 15-29 years after marriage nearly three-fourths happened in spite of contraceptive efforts to prevent them. Nearly 40 per cent. of such "accidental" pregnancies were terminated by illegal abortion.

By comparing corresponding periods of married life at different dates it is shown that during the last

25 years there has been a big increase in the proportion of pregnancies terminated by illegal abortion. The younger generation, it seems, not infrequently resorts to abortion for economic reasons early in marriage and later indulges in "planned pregnancies" when the family's finances permit. Nearly 75 per cent. of illegal abortions were performed by "doctors," 20 per cent. by midwives, and the remainder by the woman herself. The price charged for inducing abortion varied from \$2 to \$200, the average being \$60.

NEW RICH SOURCE OF VITAMIN B

Research at the experiment station of the New Mexico College of Agriculture has discovered an uncommonly rich source of vitamin B in the pinto bean. By the rat-growth method these beans are found to have 298 Sherman units of vitamin B (English B₁) per ounce of food material. This is more than is found in rice polishings, only slightly less than in wheat germ, and more than half the quantity found in dried brewers' yeast. The pinto bean belongs to the botanical species *Phaseolus vulgaris* and was probably introduced into the south-western States by the early Spanish missionaries. It has been a staple diet of the natives of these States since it was popularised by use in the army during the Spanish-American war. Until comparatively recently it was known as the rosillo bean. The name pinto means "spotted" and is no doubt a tribute to the bean's macular complexion. The production of this bean in New Mexico increased from 9700 bags (of 100 lb. each) in 1879 to 974,900 bags in 1929. Properly cooked these beans make a very succulent dish.

STUDY OF HEART DISEASE

Death from "heart disease" is a very unsatisfactory classification, covering as it does many diverse pathological states which happen to affect the same organ. A study by the U.S. Public Health Service of 450 fatal cases of heart disease occurring in Washington hospitals during the year 1932¹ reveals the following percentage classification:—

	Per cent.		Per cent.
Arterio-sclerotic hypertensive diseases	61.4	Congenital malformations	2.0
Rheumatic	13.3	Thyrototoxic	1.3
Syphilitic	12.0	Other conditions	0.6
Bacterial endocarditis and pericarditis	4.7	Undetermined	4.7

Special emphasis is laid upon the importance of arterial hypertension in causing death in middle life. Hypertension is more fatal in the negro than in the white race, more fatal especially among coloured females. This prevalence of hypertension among negroes together with the greater syphilis rate in this race results in cardiac death at a lower average age than in the whites. Rheumatic heart disease on the other hand is more common in the white race, especially among females.

¹ Pub. Health Rep., 1935, vol. 1., No. 34.

INTERNATIONAL CONFERENCE ON FEVER THERAPY. The first international meeting on fever therapy will be held in New York City next September, when therapeutic, physiological, and pathological phases of fever will be discussed. Baron Henri de Rothschild is the chairman and the secretary is Dr. William Bierman, 471, Park-avenue, New York City, U.S.A., from whom further information may be obtained.

CORRESPONDENCE

THE MIDWIFERY SERVICE IN LONDON

To the Editor of THE LANCET

SIR,—In a recent letter in your columns (Nov. 16th, p. 1145) Dame Janet Campbell called attention to a number of important questions which need solution before any plan for a salaried service of midwives can be launched with good prospects of success. Dame Janet assumed the establishment of the proposed service under local authorities; but in the metropolitan area of London the existence of two public health authorities involves a difficulty as great as any she enumerated. Here one of the first decisions must be whether the London county council or the local borough councils shall inaugurate and control the proposed service.

Since no small proportion of hospital midwifery has passed already within the administration of the L.C.C., it would seem to be an obvious and logical step to extend the scope and powers of this body to include the new domiciliary service; for a large number of examples have already made clear how great are the advantages of a single unit controlling midwifery in a hospital and the homes surrounding it. Since, however, the child welfare service is, and seems likely to remain, the responsibility of local authorities, such arrangement would separate officially and in practice would virtually isolate midwifery and infant care from each other: two branches of work whose individual success must depend on the closeness of their coöperation.

If, on the other hand, it be decided that a salaried service of midwives shall be the responsibility of the local authorities, its value must be largely diminished by hospital and domiciliary midwifery being under separate control. To perpetuate two midwifery services operating in the same area, one serving women to be confined at home, the other those who are going into hospital, both requiring the organisation of antenatal care and experts to pronounce on cases of doubtful safety, one service in emergencies having to come to the assistance of the other—this is surely no advance towards efficiency, simplicity, or economy. It is exactly the opposite.

Further, as the postnatal care of women develops (beyond, that is, the present rather formal conception of a gynaecological examination at one or two fixed dates after delivery), the importance of the present widespread incidence of maternal ill-health will come to be increasingly realised, with all its repercussions on the health of infants and the family. It may thus be predicted with certainty that post-natal supervision must comprise not merely a "pelvic overhaul" but the attempt to control all those factors which concern a woman's general health and influence her ability to succour her child. Further, it must continue to safeguard her so that after an appropriate interval she can repeat the process. What is needed is a service to which she can turn throughout the period of her reproductive life with confidence that her particular needs are known and understood: a service comparable in fact to what she would receive from her general practitioner if she could afford it. Hitherto in the working of the Maternity and Child Welfare Act not much appreciation of this has been shown.

Advance will be rendered as difficult as possible if women confined in hospital are retained indefinitely as its out-patients, while for those confined at home a separate service has to be organised; for unless all domiciliary cases are to be referred to

hospital two postnatal—just as two antenatal—services will be needed. Existing confusion will be further increased as the different authorities attempt to decide which shall provide care for the infant while the mother remains under hospital supervision. Solomon himself would be puzzled. There is no limit to the prospect of overlap and waste which must result, nor with the best will in the world can it be supposed that friction and competition can be avoided. The sufferers in such event, as always, will be the very persons it is desired to help—the mothers and their infants.

This apparently simple and eminently sensible proposal to improve the conditions of midwives and the quality of their work is long overdue. It might well mark a nodal point in the histories of both midwifery and public health. Its establishment in London is intertwined with a number of absurd anomalies which frustrate effective advance in public health in many directions. I submit, Sir, that an invaluable opportunity here arises to remove them, and that the Minister of Health, the London county council, and local borough councils should at this juncture combine, and, subordinating departmental claims, bring into being a single service uniting all those activities which can be directed with profit towards increasing the safety of mothers and children. The difficulties are considerable, but they could be overcome. Public opinion is aroused and would surely give support to such an endeavour.

I am, Sir, yours faithfully,

HAROLD WALLER.

Royal College of St. Katharine, Poplar, Dec. 9th.

CYSTICERCOSIS AND EPILEPSY

To the Editor of THE LANCET

SIR,—In reading reports on possible cases of cysticercosis one cannot but be impressed by the widespread miscomprehensions which exist regarding this disease. The biological object of cysticerci while in the tissues of the intermediate host is to remain quiescent; they may be likened to thieves who have entered some premises where they stay hidden so long as concealment is helpful to their purpose. In the same way, cysticerci normally give little or no outward sign of their presence (unless crowded out by their own numbers) while they are alive, but after their death they cause symptoms by post-mortem swelling and by the liberation of toxic products of degeneration. Consequently a period of several years commonly elapses between the invasion of the body and the onset of clinical symptoms, of which the most frequent is epilepsy.

During the life of the host, diagnosis for practical purposes is at present dependent on only two signs, neither of which unfortunately is a necessary part in the development and degeneration of the parasite—namely, the appearance of palpable cysts in the tissues, and their calcification post mortem. As regards the first mentioned there may be no cysticerci outside the brain, and even if present in muscle, &c., as well they may be too deep for detection and excision when post-mortem swelling occurs; or so few in number as to escape notice; or the host may come under examination only at a time when he is free from palpable cysts although some may have been present months or years before, or may appear months or years afterwards, as determined by the longevity of individual parasites. Calcification is found only as a form of post-mortem degeneration,

and as a rule a period of about three years elapses between the death of a cysticercus and the deposition of calcium sufficient for recognition in a skiagram. Some parasites may die off quickly, while others in the same host may remain alive for many years and, speaking generally, a positive skiagram can hardly be expected if the patient's nervous symptoms are of less than four or five years' duration. On the other hand, if the silent stage of the disease has extended (say) to over five years, calcified parasites might be detected somewhere in the body at the time of the onset of the nervous symptoms. It cannot be emphasised too strongly that, as a rule, the cysticerci in the brain do not calcify, and so cannot be seen in a skiagram; radiological examination, therefore, should never be limited to the skull.

For every case of cysticercosis immediately diagnosable, there is a large number which will defy diagnosis for years, or which can be recognised only by autopsy: and even after death the presence of a few cerebral cysticerci—only one or two in all—might "unless the pathologist has cysticercosis in mind, knows what to look for, and leaves no scrap of brain substance more than four millimetres square, unsearched."¹

I am, Sir, yours faithfully,

W. P. MACARTHUR.

Royal Army Medical College, London, S.W., Dec. 12th.

ARTERIAL EMBOLISM

To the Editor of THE LANCET

SIR,—I was much interested in reading in your issue of Nov. 30th (p. 1231) of Mr. Girdlestone's experience of a femoral embolus and its spontaneous cure at the time of operative exposure. May I refer to a somewhat similar experience of my own in 1911, the details of which were published later (Clin. Jour., Dec. 10th, 1913, p. 573) together with details of another case too ill to operate on.

A man, aged 60, was operated on for carcinoma of the larynx by the late Mr. F. A. Rose and the entire larynx successfully removed. A fortnight later the patient was suddenly seized with pain and tingling in the left foot which was followed by ascending pallor, loss of sensation and power in the left leg. Six hours later when I examined him no pulse was felt below the bifurcation of the common femoral, and the leg was cold, pallid, and insensitive from the knee downwards. I at once exposed the common femoral artery. Pulsation was found to cease at the bifurcation. After opening the sheath I raised the artery in order to apply a Crile's clamp above and below, when pulsation suddenly returned in the superficial femoral. As I could not satisfy myself of pulsation low down in Hunter's canal, I exposed the artery at this point, and found that the vessel pulsed as far as the middle of the popliteal space. On the following day some warmth returned to the foot, but the tibial arteries were pulseless. Gangrene of the foot eventually became established, and a week later I amputated the leg through the condyles of the femur. The artery was completely blocked at the bifurcation of the popliteal and thrombosis extended down both tibial arteries. The patient made a good recovery.

In the light of subsequent events I should have exposed the artery in the popliteal space, but I thought then that I might make matters worse if the clot again shifted into the tibials and that the collateral circulation round the knee might be adequate. As Mr. Girdlestone states, the happy accident in his case might be an aim on other occasions; Mr. Geoffrey Jefferson, he reminds us, suggested last year at the B.M.A. meeting at Bournemouth a deliberate attempt to massage the blood-clot

into a subsidiary artery. In my 1913 paper I referred to two successful cases of *pétrissage* for femoral embolism without exposure of the arteries by Paul Claisse (Bull. Soc. méd. hôp. de Paris, June 10th, 1910, p. 766) and Pierre Merklen (ibid., Nov. 6th, 1903, p. 1180).

Although many successful cases of embolectomy have been recorded there have been a great many failures, including one of my own (Brit. Med. Jour., 1926, i., 1032), owing to subsequent thrombosis towards which the opening of the artery must be a contributory factor, and I am not sure that *pétrissage* after exposure of the artery has received sufficient prominence. It may not be out of place to quote here what I said in 1913:

It may well be asked which method offers a better chance of success as regards gangrene—exposure of the artery and an attempt to break up the clot by massage, or incision into the artery and an attempt to re-establish the channel by removal of clot. There are two important factors to consider—viz., (1) condition of the lining of the vessels; (2) length of time that the vessel has been occluded.

(1) If the patient is old and suffering from arteriosclerosis, subsequent thrombosis is likely to occur, even if an embolus is successfully removed, and consequently *pétrissage* should offer more chance of success, even though resulting in the blocking of vessels lower down. In these cases immediate massage of the affected part should first be tried, and if unsuccessful the artery should be exposed and an attempt made to dislodge the embolus by *pétrissage*. In the case of a patient under middle age, with healthy vessels, arteriotomy conducted on careful lines should, I think, be the method of choice. A proximal clot rapidly forms as far up as the nearest branch. This fact must not be forgotten in operative procedures.

(2) The lodgment of an embolus in an artery is rapidly followed by thrombosis, the extent of which will depend on the condition of the heart and arteries and on the size of the vessel. Consequently, the earlier the attempt at embolectomy, the greater the likelihood of success. At the same time massage is less likely to succeed once thrombosis has become established.

I am, Sir, yours faithfully,

London, W., Dec. 12th.

C. GORDON-WATSON.

TREATMENT OF HÆMATEMESIS

To the Editor of THE LANCET

SIR,—I also have read Prof. Meulengracht's article with great interest. It seems to me that we should depart from the present line of treatment. Figures collected over a period of time and in various clinics would suggest that there was room for improvement, and I welcome Prof. Meulengracht's method as one which at least relieves the patient of a form of treatment which is so definitely lowering, and from the patient's point of view must be in the nature of a mild degree of torture. The stomach in the ordinary way is constantly being supplied with saliva and is also supplied with a defence mechanism which prevents digestion of its mucous membrane. When an ulcer bleeds we take the patient, prevent as far as possible the flow of saliva, and by keeping his stomach empty allow his acid gastric juice to have free play on the raw ulcer area, which is defenceless; the evidence would go to show that at the same time such an empty stomach is in more active movement than a partially filled, or full, one. We have then at the outset all the factors that are likely to promote further hæmorrhage. Seven years ago I pointed out (Brit. Jour. Surg., 1928, xvi., 203) that saliva had a very potent action in decreasing the clotting time, whereas the acid gastric juice, especially in the case of an ulcer, delayed the clotting of blood very considerably.

¹ Trans. Roy. Soc. Trop. Med. Hyg., 1933-34, xxvii., 355.

It would appear to me that in Prof. Moulengracht's treatment he is providing—

- (1) That the patient's general health should be maintained.
- (2) That the movements of the stomach are reduced by its being kept partially filled.
- (3) That the acid juice is neutralised by food and alkalis.
- (4) That a free flow of saliva is produced to further assist clotting.
- (5) That the patient is relieved from the stress of thirst and an uncomfortable posture, and, as the article points out, is more easily nursed.

I hope that physicians in this country will give his method a trial, and I shall look forward to seeing in your columns at some later date further figures on this subject.—I am, Sir, yours faithfully,

Harley-street, W., Dec. 11th.

JOHN B. HUNTER.

PAIN AND EUTHANASIA

To the Editor of THE LANCET

SIR,—I have read with interest your report of the inaugural meeting of the Voluntary Euthanasia Legalisation Society, and I have noticed how the argument returns again and again to the inadequacy of drugs, particularly morphin, to relieve intolerable pain. I wonder if the members of this society are aware that no patient need suffer intolerable pain from any local disease situated below the segmental level at which a bilateral chordotomy can be done—that is, the fifth cervical segment of the spinal cord. It is true that in a particular case the operation might prove fatal; but that surely would meet with the approval of the Society. As a matter of fact, the operation is not particularly difficult or dangerous, and I have never known of a death directly due to it. This is not put forward as an argument against the aims and objects of the Voluntary Euthanasia Legalisation Society; but it does seem to me to limit the field of their concern very considerably. The real purpose of this letter is to suggest that those who are especially concerned with the treatment of such conditions as, for example, inoperable carcinoma of the pelvic organs, might give more than a passing thought to the possibility of the surgical relief of pain.—I am, Sir, yours faithfully.

London, W., Dec. 14th. A. S. BLUNDELL BANKART.

To the Editor of THE LANCET

SIR,—I imagine that I am not the only doctor who was surprised to see three pages of THE LANCET occupied by an account of the inaugural meeting of the Voluntary Euthanasia Legalisation Society. Why should pages of a medical journal be filled with a description of a meeting to advocate measures which have nothing at all to do with medicine, except that a number of medical persons are members of the society? And, when one reads the report, one finds no reason for its publication in THE LANCET. The gist of the résumé is that some deaths are painful; and that some clergymen see nothing incompatible between Christianity and euthanasia. That did not need three pages.

One may presume, Sir, that you know the tastes of your readers, and that the report was inserted because you thought that it was proper to do so. All I desire to do is to make clear one misunderstanding that seems to lurk in Lord Moynihan's mind. He is reported to have said, "There were denominations within the Christian Church whose members had no right to such relief—that for which sanction was desired; these persons were asked to stand aside." These persons do not believe

that they alone have no right to disobey the laws of God; they believe that it is a part of their duty to inculcate these laws into the minds of others; and, therefore, they will not stand aside. Lord Moynihan can rest assured that "these persons" will do everything in their power to rouse public opinion against a procedure which they regard as mortally sinful. These same persons will not be misled by Mr. Norwood, who is reported to have said that "the principal concern of religion was more with the entrance and conduct of life than with its exit." They will remember the divine assurance that the mode of exit from life of the penitent thief had a very definite effect on his comfort elsewhere.

The sole purpose of this letter is to point out that there are various organisations, some Roman Catholic, some undenominational—some medical and some lay—which are prepared for the battle.

I am, Sir, yours faithfully,

Park-square West, N.W., Dec. 13th.

A. PINNEY.

A TEST FOR CANCER

To the Editor of THE LANCET

SIR,—The letter published in your columns on Dec. 14th above the signature of Dr. G. Burford and others is either of extreme importance or very mischievous. But whether it relates to a genuine test for cancer or to one of no value it is almost certainly going to attract a number of guineas to the address given in Park-crescent. I will be obliged if you will give equal publicity to the following challenge—I will send to that address twenty specimens of urine collected under the conditions mentioned and clearly labelled A to T, the results of the tests, together with the correct diagnosis in each case, to be published subsequently and prominently in your columns. But I do not propose to send any money in payment for this test because, if the claims made are substantiated, a much greater reward is inevitable.

I am, Sir, yours faithfully,

London, W., Dec. 16th.

T. IZOD BENNETT.

GASTROCOLIC FISTULA

To the Editor of THE LANCET

SIR,—I should like to add my opinion to that of Dr. Hurst (in your issue of Nov. 16th) that the result of dealing with a gastrocolic fistula by simple disconnexion is an operation which has not necessarily a high mortality. I have not met with a single case during 1935, but I performed the operation three times during 1934 and recovery was uneventful in each case. Although I agree with Dr. Hurst that thorough lavage is of great advantage, I do not agree that the operation calls for the exceptional skill he suggests, and I am putting these cases on record to encourage surgeons of ordinary ability when they feel called upon to deal with such cases in this way.

Precautions making for safety in this operation are:—

- (1) To avoid soiling the site during operation, and to drain it afterwards.
- (2) To close the colon and jejunum without narrowing—in one case I left some narrowing of the colon at the site of suture and this persisted some 9 months later.
- (3) To support sutures in a somewhat unhealthy gut with an omental graft.
- (4) To prevent by caecostomy postoperative distension of the proximal colon, which would lead to strain on the suture line.

I am, Sir, yours faithfully,

Harley-street, W., Dec. 11th.

TURNER WARWICK.

EPIDEMIOLOGY OF PUERPERAL SEPSIS

A NEW INVESTIGATION

It is estimated that more than a third of the mothers who die after childbirth every year in this country die as a result of sepsis. Generally speaking, over 70 per cent. of the fatal cases of puerperal sepsis are due to the hæmolytic streptococcus.

THE SOURCE OF THE INFECTING ORGANISM

The source of the infecting organism has been the subject of keen research, a crucial question being whether it is usually present in the genital tract before labour, or whether it comes to it from the outside.

The *genital flora* has been extensively studied before, during, and soon after labour, with the result that the hæmolytic streptococcus is found to occur in about 3 per cent. of the patients studied. It appears, however, that a minority only of these "carriers" become infected in the puerperium, the infection when it does occur being generally mild and quite unlike that usually associated with fatal streptococcal infection. The explanation lies in the fact that the hæmolytic streptococci do not form a homogeneous group, and that those found in the genital canal of pregnant and parturient women are not pathogenic to the human subject. The work of Lancefield,¹ Hare and L. Colebrook,² and Lancefield and Hare³ shows that the biochemical and serological characters of hæmolytic streptococci are closely correlated with the pathogenic capacities. For example, the streptococci responsible for bovine mastitis belong to a well-defined group rarely found in severe human infections; while the majority of strains from acute human disease belong to another group distinct from the bovine strains. The genital streptococci found as saprophytes before and during labour fall into serological groups different from that containing the streptococci found associated with acute disease in the human being. Further work by Hare and Colebrook⁴ has demonstrated that not only the streptococci present in the flora of the genital tract but those found present on the normal skin of the hand and perineum, and in the bowel, show no evidence of marked pathogenicity for man.

There remain for consideration streptococci from *extragenital septic conditions* and from the *respiratory tract*, both of the patient and of those in contact with her. Respiratory streptococci have been incriminated with varying degrees of vehemence as a source of puerperal infection, while other workers boldly deny their ætiological significance.

The available evidence on the whole points to the respiratory streptococci as the causal organisms of puerperal sepsis, and the recent observations of Smith⁵ support this view. He found strains of streptococci identical with the infecting strain in the respiratory tract of the patient or a contact in 39 of the 49 cases of puerperal sepsis studied.

DIFFICULTIES AND POSSIBLE FALLACIES

The connexion between a particular hæmolytic streptococcus carried by an apparently healthy person and a streptococcal puerperal infection is difficult to demonstrate. It is necessary to make a careful epidemiological study of the infecting strains in a large number of women with puerperal infection, and of the strains found in streptococcal carriers concerned more or less immediately with the woman

during and after the time of her confinement, before any conclusions can be drawn. Dr. Dora Colebrook, working at the Bernhard Baron Memorial Research Laboratories attached to the isolation block of Queen Charlotte's Hospital, has now carried out a study, on lines similar to that published by Smith, which has just been published as No. 205 of the Special Report Series of the Medical Research Council.⁶

Dr. Colebrook discusses fully the fallacies inherent in this method of approach to the problem. Briefly, no source of infection can be considered a possible one unless the streptococcus found in it is identical with that in the infected genital tract. In addition, adequate opportunity for the passage of the streptococcus must be demonstrated. The two main problems are therefore the establishment of identity between strains of streptococci, and the adequate exploration of the human environment of the patient.

CRITERIA AND METHODS ADOPTED

The criterion of identity adopted in this study was a serological one. Strains were classified into Griffiths'⁷ types by direct agglutination with mono-specific sera. This revealed a series of provisional identities which were confirmed by further test. A complete serological identity between two strains can be proved only if each absorbs all the agglutinins from the antiserum prepared against the other. The method must be rigidly quantitative to be of any value. Accordingly the minimal absorbing dose (M.A.D.) of each strain for its homologous serum was determined, using the latter at a definite multiple of its agglutination-end-point concentration, and the test strain was considered identical only if 3 M.A.D. would remove 98.5 per cent. of the agglutinins from the serum. Control absorptions were made with strains known to be heterologous.

The patients used for this investigation were suffering from a pyrexia, more or less severe, whose onset was within three weeks of confinement. Swabs were taken from the genital tract and from the anterior nares, tonsils, and sometimes gums. The contacts included nurses, doctors, the "handy-women" at the confinement, and the husband and children of the patient. Attention was paid to points of special ætiological importance, such as a person with a recent history of tonsillitis, scarlet fever, or chronic nasal discharge. Dr. Colebrook points out that the ease with which hæmolytic streptococci can be passed from person to person makes it difficult to be certain that many of the contacts, of necessity swabbed some time after the infection had developed, were not carriers as a result of dissemination of the puerperal strain. (Contact swabbing was carried out as soon as possible after the discovery of streptococcal infection.) In addition, there can be no conclusive evidence that identical strains in a contact and the genital tract of the patient had not been independently acquired. When the type of streptococcus is relatively rare, the likelihood is remote, but with a prevalent strain the possibility must be considered.

The finding of an identical streptococcus in contact and patient, therefore, indicates only a *possible* source of infection, though in certain cases circumstances may point to its being a very probable one. The material gathered was considered complete if all persons that could be ascertained as having taken part in the conduct of the labour had been examined, or if, in spite of one or more attendant-contact swabs being missed, identical streptococci were found in another of the contacts. Incomplete

material included all groups in which a possible swab was missed, and no identity between genital and contact strains was established.

RESULTS OF THE PRESENT INVESTIGATION

Sixty-seven patient-contact groups were investigated, and an extragenital strain serologically identical with the infecting strain was found in 48 of them. In 14 the possible source was present in the respiratory tract of both patient and contact. In 11 an identical strain was found only in the patient herself (in 5 of these groups the material was incomplete). In 23, identical strains were found in contacts only. In 4 groups technical difficulties prevented the establishment of identity, though streptococci were found in contacts. In the 15 remaining groups, no possible source of infection was found.

A possible source was found in the patient's own respiratory tract 24 times.

The social relationship of the patient with the carrier is of interest. A strain identical with the infecting strain was isolated from—

(1) The doctor	in 5	} patient-contact groups
(2) The midwife	15	
(3) The handwoman	3	
(4) The husband of the patient	3	
(5) The mother or father of the patient	2	
(6) A child of the patient	8	

and in 3 groups the infecting strain was found in the ear of the patient's child, the septic foot of the patient's child, and the septic foot of the patient.

To summarise, an extragenital strain was found for 48 patients out of 67. Dr. Colebrook points out that—

"owing to failure, in the early stages of the work, to realise the importance of swabbing the nose as well as the throat of patient and contacts, and the members of the household of the patient as well as her attendant-contacts, and owing to the difficulties experienced in securing the full complement of swabs, and to the use, in certain cases, of an ineffective swabbing technique, the figure quoted above is fallaciously low. Thus, in the 31 patient-contact groups in which the patients, and, so far as could be ascertained, all their attendant-contacts were swabbed, a possible source for the infection of 27 (87 per cent.) patients was found, whereas in the 32 patient-contact groups in which swabs were known to be missing, the percentage was only 65; in the case of 4 only of the 15 patients for whose infection no source was found was the full number of swabs received from patient and attendant-contacts, and in the case of one only of these 15 patients were swabs taken from the children of the household."

IMPORTANCE OF RESPIRATORY CARRIERS

These figures indicate that the respiratory source of infection must be taken very seriously. If Dr. Colebrook's figures may be taken as a representative sample of cases of puerperal sepsis, a large proportion of these deaths from this cause are attributable to infection by a carrier of pathogenic streptococci. The causal linkage may not be established with mathematical certainty, but it is established as firmly here as in many other diseases where a superstructure of stringent precautionary measures has been based on the laboratory evidence. And the fact that the majority of strains isolated from patient and contact fall into a limited number of Griffiths' types, types commonly met with in other diseases (including respiratory) caused by hæmolytic streptococci, affords indirect support to her finding. The result of rigid precautionary measures in the conduct of labour in certain hospitals indicates that technical improvements can lower the incidence of sepsis. Adequate

masking of personnel, intelligently applied antiseptic technique, and the exclusion of carriers from the attendants are among the measures indicated for trial. In addition, steps should be taken to ensure the continued exclusion of carriers from contact with women in labour and during the puerperium by collaboration between the bacteriologist and the clinician.

The familial carrier is a problem that this report has brought to light, and although the number of families investigated by Dr. Colebrook is insufficient to give any indication of the magnitude of the risk of infection to which a pregnant woman is exposed to in her family life, the suggestion that here is an indication for the education and assistance of the expectant mother on matters of hygiene which may have important results is not the least valuable of the conclusions Dr. Colebrook has to offer.

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PHYSIOLOGICAL BASES OF NUTRITION

REPORT OF A TECHNICAL COMMISSION OF THE LEAGUE OF NATIONS

THE report on the physiological bases of nutrition drawn up by the Technical Commission of the Health Committee of the League of Nations which met¹ in London from Nov. 25th–29th was published at Geneva on Dec. 6th. The Commission is in agreement with the conclusions of the Burnet and Aykroyd report² that deficiencies in important nutrients are a common feature of modern diets and that these deficiencies usually occur in the protective foods (foods rich in minerals and vitamins) rather than in the energy-giving foods (proteins, fats, and carbohydrates). The Commission has set out its findings in two parts: Part I. dealing with the requirements of energy-giving foods; Part II. with mineral and vitamin requirements.

PART I

Energy, Protein, and Fat Requirements

CALORIE REQUIREMENTS

An adult, male or female, living an ordinary everyday life in a temperate climate and not engaged in manual work is taken as the basis on which the needs of other age-groups are reckoned. An allowance of 2400 calories net per day is considered adequate to meet the requirements of such an individual.

The following supplements for muscular activity should be added to the basic requirements:

Light work :	up to	50	calories per hour of work.
Moderate work :	"	50–100	" "
Hard work :	"	100–200	" "
Very hard work :	"	200	calories and upwards per hour of work.

The energy requirements for other ages and for

¹ THE LANCET, Nov. 30th, p. 1270, and Dec. 7th, p. 1305.
² *Ibid.*, August 10th, p. 311.

mothers can be obtained from the following table of coefficients:

Age (years).	Coefficient.	Calories.
1-2	0.3	720
2-3	0.4	960
3-5	0.5	1200
5-7	0.6	1440
7-9	0.7	1680
9-11	0.8	1920
11-12	0.9	2160
12 and upwards (male and female)	1.0	2400

Women			
Pregnant	1.0	2400	
Nursing	1.25	3000	

The requirements for babies under 1 year are difficult to specify except in terms of body-weight, but the following allowances are considered adequate:

Age (months).	Calories per kilogramme of body-weight.
0-3	100
3-6	90
6-12	80-90

The muscular activities characteristic of every healthy child and adolescent necessitate additions to the basic requirements. It is suggested that the activities of children of both sexes from 7-11 years be considered as equivalent to light work, of boys from 11-15 years as moderate work, and of girls from 11-15 upwards as light work.

Allowance must also be made for women engaged in household duties, whether pregnant or not; these have to be reckoned as equivalent to light work for eight hours daily.

PROTEIN REQUIREMENTS

In practice the protein intake for all adults should not fall below 1 gramme of protein per kilogramme of body-weight. The protein should be derived from a variety of sources, and it is desirable that a part of the protein should be of animal origin.

During growth, pregnancy, and lactation, some animal protein is essential, and in the growing period it should form a large proportion of the total protein.

The following allowances of total protein are recommended:

Age (years).	Grammes per kilogramme of body-weight.
1-3	3.5
3-5	3.0
5-15	2.5
15-17	2.0
17-21	1.5
21 and upwards	1.0

Women			
Pregnant	2.0		
Nursing	2.0		

All the above figures on which the Commission has agreed are average values and it is essential that they should be interpreted in the light of this fact.

FAT REQUIREMENTS

Fat must be a constituent of the normal diet, but the data at present available do not suffice to permit a precise statement of the quantity required.

In cold climates the energy-content of the diet should be increased.

PART II

Mineral and Vitamin Requirements

The Commission recognises the fact that the deficiencies of modern diets are usually in the *protective foods* (foods rich in minerals and vitamins) rather than in more strictly *energy-bearing foods* (rich in calories). Among the former are, first and most important, milk and milk products, eggs and glandular tissues; then green-leaf vegetables, fruit, fat fish, and meat (muscle). Among the energy-bearing

foods of little or no protective power are sugar, milled cereals, and certain fats.

Of energy-giving foods, unmilled cereals are not rich in protective nutrients and the more they are refined the less is their protective power. Many fats, especially when refined, possess little or no protective constituents. Refined sugar is of value only as a source of energy; it is entirely devoid of minerals and vitamins. The increasing habit of large sugar consumption tends to lessen the amount of protective foods in the diet and is to be regarded with concern.

REQUIREMENTS OF PREGNANCY AND LACTATION

The Commission has attempted to define the quantitative needs of protective foods for perfect nutrition in terms of the requirements for the pregnant and nursing woman. She should be regarded as the member of the population needing the greatest "protection" in order to ensure adequate physical endowment for the child at birth and optimum nutrition during infancy.

The greatest difficulty in arranging such a diet is to provide adequate calcium, phosphorus, iron, and vitamins B₁, B₂, C, and D.

Milk, whole or skimmed, is a rich source of calcium salts and phosphates and of vitamin B₂, also a good source of vitamin B₁; milk fat is an excellent source of vitamin A. Eggs contain vitamins A, B₁, B₂, and D and are rich in iron. The proteins of these foods are not only themselves of the highest nutritive value, but also improve the utilisation of the protein contained in cereals and vegetables. Milk has an additional advantage in the abundance and availability of its calcium salts and phosphates; these enhance the effect of any vitamin D derived from other articles of diet or from sunshine. Milk, although itself poor in iron, renders more effective the iron contained in the diet.

Ordinary diets are usually inadequate in vitamin D and, except in sunny seasons and sunny countries, a small daily ration of cod-liver oil is to be recommended in the diet of the pregnant and nursing mother and in that of the growing child. Fish-liver oils are the richest known natural sources of vitamin A and are also important sources of iodine. In goitrous regions, where sea-fish are not available, the provision of extra iodine in the form of iodised salt or in some other way is recommended.

An extended dietary use of the potato is recommended to replace part of the sugar and highly-milled cereals in the ordinary diet. Potatoes provide extra vitamin C and more readily available calcium and phosphorus than are present in cereals. Potatoes also yield more iron and B vitamins than milled cereals.

The above paragraph applies to countries where potatoes are abundant, but it is of general application, due account being taken of local resources.

REQUIREMENTS OF OTHER ADULTS AND CHILDREN

Tables I., II., III., and IV. contain details of specimen diets derived from investigations made in Great Britain, the United States, and Scandinavian countries, considered satisfactory for a pregnant or nursing woman and for infants and children of ages up to 5 years. They are put forward as models which could be modified in many particulars according to national dietary habits and supplies, provided that the dietary principles contained in them are duly regarded.

The protective foods in Table I. are arranged to yield approximately 1400 calories without inclusion of cereals, fats, or sugar; these can be added as

TABLE I.—DIETARY SCHEDULE FOR THE PREGNANT AND NURSING WOMAN

A.—Protective Foods

Food.	Amount.	Calcium.	Phosphorus.	Iron.	Iodine.	Vitamin A	Vitamin B ₁	Vitamin B ₂	Vitamin C	Vitamin D	Cal.
	Grammes.			Milligrammes.		International units.			International units.		
Milk	1000	1.2	0.9	2.4	0.02-0.05	3000	50-150	Rich.	Poor.	Poor.	6
Meat (or fish or poultry)	120 (a)	—	0.3	$\frac{3.0}{2}$ (a ₁)	..	Poor.	Poor (b).	..	..	None.	2
Eggs (one)	50	—	0.1	1.4	..	1300	14	Rich.	None.	40 (c).	..
Cheese (Cheddar) ..	30	0.3	0.2	0.4	..	800	Poor.	Good.	Poor.	Poor.	1
Green and leafy vegetables	100 (d)	0.5	—	1.0	..	100	25 (raw)	..	300 (raw)	None.	..
Potatoes	250	—	0.2	3.0	..	Poor.	50	..	320 (cooked)	..	2
Legumes, dried	10 (e)	—	—	2.0	..	..	15	..	None.	..	..
Cod-liver oil	3.5	—	—	—	Richest source.	3500	None.	None.	..	300	..
An available source of vitamin C (from raw fruits and vegetables)	..	..	..	..	..	..	..	..	250-500	..	..
Total yield	..	2.0	1.7	11.7	Adequate.	8700	154-254	Adequate.	870-1120	340	14

B.—Supplementary Energy-yielding Foods by means of which the Individual's Energy Requirements can be met

Cereals as needed— Highly milled	250 (f)	—	0.2	3.0	..	..	..	..	..	..	10
or Whole grain	250 (g)	—	0.9	9.0	..	..	270	..	..	..	10
Fats as needed. Sugar as needed.											

- (a) Calculations for lean meat.
 (a₁) One-half calculated as available iron.
 (b) Except glands (liver and kidney) and pork muscle.
 (c) 12 eggs equivalent to 3.5 g. cod-liver oil.

- (d) Estimated on basis of cabbage as type.
 (e) Calculated as beans.
 (f) Calculated as white flour.
 (g) Calculated as whole wheat.

TABLE II.—Infants

AGE 0-1

Breast-feeding is strongly recommended during the first nine months of life. Where and when sunshine is not abundant, each breast-fed infant should receive a small daily ration of cod-liver oil, up to 6 grammes daily, to supply the antirachitic vitamin D. This is even more important for artificially fed infants. Fresh fruit and/or vegetable juice to provide antiscorbutic vitamin C should also be given to every infant, especially the artificially fed.

When breast-feeding is not possible, the basis of the infant's diet should be milk, suitably modified if necessary, and supplemented by an adequate amount of substances rich in vitamins A, C, and D.

Where complete breast-feeding is impracticable, partial breast-feeding is urged, and the supplementary diet should consist of cow's milk and other suitable protective foods.

AGE 1-2 (1000 CALORIES)

A.—Protective Foods

Food.	Amount (grammes).	Calories.	Protein (grammes).
Milk	1000	660	32
One egg (or equivalent, as 30 grammes meat or fish or liver, if available)	48	70	6
Green leafy vegetables	30-60	15	—
Potato (and other root vegetables)	50	50	1
Cod-liver oil	3	30	—
A source of vitamin C (raw vegetable or fruit)	—	—	—
Total		825	39

B.—Supplementary Energy-yielding Foods

Fats (butter if possible)	3.5	25	—
Cereals (as wheat)	50	150	7
Total		1000	46

TABLE III

AGE 2-3 (1200 TO 1300 CALORIES)

A.—Protective Foods

Food.	Amount (grammes).	Calories.	Protein (grammes).
Milk	1000	660	32
One egg (or equivalent, as 30 grammes meat or fish or liver, if available)	48	70	6
Green leafy vegetables	60-100	20	2
Potato (and other root vegetables)	100	100	2
Cod-liver oil	3	30	—
A source of vitamin C (raw vegetable and fruit)	—	—	—
Total		880	42

B.—Supplementary Energy-yielding Foods

Fat (butter if possible)	3.5	25	—
Cereals (as bread)	100	300	14
Total		1205	56

TABLE IV

AGE 3-5 (1400 CALORIES)

A.—Protective Foods

Food.	Amount (grammes).	Calories.	Protein (grammes).
Milk	1000	660	32
Egg	48	70	6
Meat, fish, or liver	30	40	6
Green leafy vegetables	100	30	3
Potato	150	150	3
Cod-liver oil	3	30	—
A source of vitamin C (raw vegetable or fruit)	—	—	—
Total		980	50

B.—Supplementary Energy-yielding Foods

Fats (butter if possible)	7	55	—
Cereals (as bread)	125	400	17
Total		1415	67

required to satisfy the energy requirements of any individual. For adults other than the pregnant and nursing woman, the amount of protective foods might be reduced, if necessary, for economic reasons. For growing children, however, the maintenance of a high proportion of protective foods should be the aim.

In Tables II., III., and IV., specimen diets are drawn up on the above basis for age-groups, 0-1, 1-2, 2-3, and 3-5 years. Since the rate of growth of a child decreases with advancing age, approximately the same amount of the protective foods will suffice for 10-15-year-old children as is required for the 5-year-old child.

GENERAL RECOMMENDATIONS

Although a *simplified* diet may be so constituted from a few protective foods as to be satisfactory, it is a general principle that *variety in diet* tends to safety, provided it contains a sufficiency of the protective types of food materials.

White flour in the process of milling is deprived of important nutritive elements. Its use should be decreased and partial substitution by *lightly milled cereals* and especially by *potatoes* is recommended. The consumption of an excessive amount of *sugar* is to be condemned, and in this case also partial replacement by *potatoes* is urged.

Milk should form a conspicuous element of the diet at all ages. The Commission commends the tendency manifested in some countries to increase the daily intake up to one litre per day for pregnant and nursing women, as well as to provide an abundant supply for infants, children of all ages, and adolescents. The practice of providing milk either free or at a reduced price to these is highly recommended. The Commission desires to draw attention to the high nutritive value of *skimmed and separated milk*, which, although deprived of its vitamin A through removal of the fat, retains the protein, the B and C vitamins, the calcium and other mineral elements. The Commission deplores the large wastage in many countries of this valuable food.

Fresh vegetables and/or fruit should always be constituents of the normal mixed diet. Adequate provision of the vitamins other than vitamin D can be readily accomplished by inclusion in the diet of optimum amounts of protective foods. Where these are not available, only such *vitamin preparations* as are *officially controlled and approved* should be permitted.

The Commission emphasises the need for provision of *extra vitamin D*, either as cod-liver oil or as irradiated products, wherever and whenever sunshine is not abundant, especially in the period of growth and during pregnancy.

PROBLEMS RECOMMENDED FOR FURTHER STUDY

1. Assessment of the nutritional state of children.
2. Nutritive food requirements during the first year of life.
3. Minimum vitamin and mineral requirements.
4. Minimum fat requirements.
5. The nutritive and "supplementary" values of the different protein-containing foods, to determine to what extent and in what forms animal protein is necessary for growth and health.
6. The relative nutritive value of different cereals according to the degree of milling.
7. The extent to which the increasing consumption of sugar is detrimental to health.
8. Influence of climate on food requirements.
9. The extent to which diets in common use fall below the standards recommended in this report.

MEDICINE AND THE LAW

Impersonating a Registered Practitioner

Ernest Pearce Freeman, who had posed as a doctor, was sentenced to four years' penal servitude at Birmingham assizes last week. The gist of the charges against him was that he had represented himself to be a Dr. Louis Rabinov and to possess the professional qualifications shown against Dr. Rabinov in the Medical Register Colonial List. Freeman had bought and successfully conducted a medical practice at Hall Green, Birmingham; he had also obtained clothes from a Birmingham tailor, drugs from a chemist, and a car from a motor dealer in the name of Dr. Rabinov and in circumstances which justified the jury in finding him guilty of false pretences and forgery. He pleaded guilty to illegalities in respect of dangerous drugs. A charge of bigamy was, at his request, taken into account by the court in passing sentence. Further charges of indecent assault arose out of Freeman's treatment of women patients who believed themselves to be consulting a genuine doctor. This aspect of the case recalls the old ruling in *R. v. Rosinski*, where it was held that an assault was committed when a man, professing to act as a medical adviser, fraudulently induced a girl to strip by falsely alleging that it was necessary for medical reasons to do so. It was contended on Freeman's behalf that he had done nothing to his women patients except in the course of treating them as a doctor would have done. With the judge's consent, the prosecution did not proceed with these charges of indecent assault.

The remarkable adventures of Freeman, partly given in evidence during the trial and partly supplied by the police after his conviction, had included some connexion with medicine. He left his home in Belfast at the age of 14 and went to America. A claim to have qualified at the Chicago College of Medicine was not substantiated by police inquiries. In 1915 he returned to England and served overseas with the Royal Fusiliers, being discharged in 1917 with a very good character. He went back to the United States and claimed to have acted as assistant to a doctor in Utah and to have worked in the State hospital. He left this post with moneys stated to have been fraudulently collected and returned to England. In 1922 he married; next year he absconded from a firm in Newcastle and re-entered America with a false passport in the name of Kenneth McLennan. Working in Buffalo as an office manager and salesman, he stole and filled in blank cheques and drew the money. Convicted for these offences, he was deported and he landed in Glasgow in 1925. Presently he was arrested for a former embezzlement at Newcastle and went to prison for three months. On release he became manager of a London dance hall, but he falsified accounts and embezzled money, with the result that he went to prison for another 12 months. Later he was heard of at Singapore, obtaining money there for the formation of a company. In March, 1934, he was at Melbourne where he made the acquaintance of Dr. Louis Rabinov, a practitioner with Australian and Irish degrees. He told Dr. Rabinov that his own family in Belfast had known Mrs. Rabinov in Dublin. Dr. Rabinov seems to have summed up his visitor as an impostor and he suspected him of carrying off a copy of his diploma. In September Freeman came back to England and acted as locum tenens to doctors in London and on the South Coast. He then, in answer to an advertise-

ment, bought a medical practice at Hall Green, Birmingham. He showed the vendor a letter which was a striking testimonial to Dr. Rabinov from the Anglo-Austral Chemical Co. Ltd., signed "E. P. Freeman, Managing Director." At Birmingham he had the impudence to put up a plate calling himself "Dr. Louis Rabinov, M.B., B.S. (Melbourne), D.G.O. (Dublin)"; on the wall of his surgery was a diploma purporting to have been given to Dr. Rabinov in Melbourne. Witnesses described Freeman as a man of forceful personality. There was evidence that he actually increased the practice he had bought. When he took it over in 1934 there were 24 panel patients; in the following January there were 84 and in April 1935. There were subsequent negotiations for the resale of the practice. He had lately purchased an hotel at Cowes, describing himself as Dr. Richard Grant, lately arrived from abroad.

Whatever Freeman's medical qualifications may have been, Mr. Justice du Parc passed sentence on him as "a crafty criminal and a danger to society." Members of the medical profession will probably be startled at the ease with which a rogue can adopt the identity of a registered practitioner. There have been other instances in the past few years of this kind of fraud, the criminal sometimes taking advantage (like Freeman) of the remoteness of his victim's place of practice, and sometimes taking one of the commoner surnames on the Register with the obvious hope of making his identification more difficult. The case suggests that, in dealings with strangers—e.g., in engaging a locum tenens, taking a partner, or selling a practice—no precaution should be spared, though it is hard to see how the false Dr. Rabinov could have been unmasked without more detective research than the average practitioner has time for.

Naturopath and Illegal Operation

Another case at the Birmingham assizes was that in which John Wilson, who described himself as a naturopath and osteopath with American training, was found guilty of criminal abortion. The offence was committed upon a young woman who had acted as his "receptionist." In the judge's view the jury's verdict meant that the girl's story of Wilson's relations with her was to be believed in spite of his denials. The details of the case are of no special interest except for certain observations of Mr. Justice du Parc. There was no suggestion that Wilson was a professional abortionist or that he had posed as a registered practitioner. But the judge pointed out that the medical knowledge claimed by the accused made the offence more serious because he must have known the dangerous consequences. Fortunately the medical treatment which the young woman afterwards received had saved her life; otherwise, said the judge, Wilson would have been standing his trial for manslaughter at least.

THE fifth attempt on Mount Everest will be made next year under the leadership of Mr. Hugh Rutledge. In 1933 the party consisted of 16 men, but this time the number has been limited to 12 to reduce difficulties of portage. The final medical examination of picked candidates was carried out by the central medical establishment of the Royal Air Force and the selected 12 include Dr. C. B. Warren, Dr. Noel Humphreys, and Mr. F. H. L. Wigram, a medical student at St. Thomas's Hospital.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Capt. C. M. R. Thatcher to *Pembroke* for R.N. Hospital, Great Yarmouth.

Surg. Comdrs. H. L. Douglas to *Pembroke* for R.N.B.; H. E. Scargill to *Excellent*; A. H. Joy to *President* for R.N. College, Greenwich; C. H. M. Gimlette to *Pembroke* for R.N. Hospital, Chatham; and J. C. Kelly, D.S.C., to *Amphion*.

Surg. Lt. Comdr. T. C. H. Neil to rank of Surg. Comdr. Surg. Lt. Comdrs. J. Johnston to *Curacoa*; H. J. McCann to *Victory* for R.N.B.; S. J. Savage to *Drake* for R.N.B.; E. T. S. Rudd to *Dolphin*; and L. P. Spero to *President* for course.

Surg. Lt. G. D. Wedd to *Scarborough* (on recommg.).

Surg. Comdrs. (D). W. C. Murray, O.B.E., and J. F. Place to rank of Surg. Capt. (D).

Surg. Lt.-Comdrs. (D). A. Dally, A. D. McHaffie, A. Macpherson, and J. T. Wood to rank of Surg. Comdr. (D).

ARMY MEDICAL SERVICES

Col. T. S. Blackwell, late R.A.M.C., retires on ret. pay. Lt. Col. J. A. Renshaw, from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS

Maj. P. J. Ryan, M.C., to be Lt.-Col.

Short Serv. Commissions.—Clayton Henry George to be Lt. (on prob.) and confirmed in his rank. (Substituted for notices in *THE LANCET* of August 31st and Nov. 2nd.)

Lt. J. M. Carnow to be Capt.

REGULAR ARMY RESERVE OF OFFICERS

Lt.-Col. A. M. Pollard, D.S.O., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY

Capt. E. White to be Maj.

O. T. Wade (late Cadet Lee.-Corpl., Repton Sch. Contgt., Jun. Div., O.T.C.) to be Lt.

ROYAL AIR FORCE

Squadron Leaders J. D. Leahy, M.C., to R.A.F. Station, Calshot, for duty as medical officer; W. J. G. Walker to No. 7 Flying Training School, Peterborough, for duty as medical officer; and T. J. X. Canton to R.A.F. Station, Manston, for duty as medical officer.

Flight Lt. G. H. J. Williams to Aeroplane and Armament Experimental Establishment, Martlesham Heath.

Flying Offrs. P. A. Cooper to No. 1 School of Technical Training (Apprentices), Halton; T. J. M. Gregg and R. L. Soper to Princess Mary's R.A.F. Hospital, Halton; R. S. B. McClean to R.A.F. Hospital, Cranwell; L. N. Trethowan to R.A.F. Station, Bircham Newton; A. S. Amsden to No. 7 Flying Training School, Peterborough; H. E. Bellringer to Home Aircraft Depot, Henlow; C. M. Carlyle-Gall to Central Flying School, Upavon; R. A. Cumming to No. 11 Flying Training School, Wittering; W. J. L. Dean to No. 2 Flying Training School, Digby; S. R. C. Nelson to No. 6 Flying Training School, Netheravon; R. S. Peill to No. 5 Flying Training School, Sealand; and J. B. Wallace to R.A.F. Depot, Uxbridge.

NUNEATON GENERAL HOSPITAL.—The annual report of this hospital shows that its income is £10,700, and is mainly derived from the weekly contributions of work-people. The balance of income over expenditure is £1050, but £1000 will have to be spent to meet the cost of a new maternity ward which is badly needed.

INGHAM INFIRMARY, SOUTH SHIELDS.—On Dec. 7th Sir James Roundhead opened the new buildings at this hospital, which include a ward block, out-patient department, two operating theatres, kitchens, and an enlargement of the nurses' home. The extensions will eventually cost £60,000, and over £11,000 is still required. With the new extensions the hospital now has 183 beds.

OBITUARY

WALTER SYDNEY PERRIN, M.Chir. Camb.,
F.R.C.S. Eng.

Mr. Perrin's death on Dec. 8th was unexpected, for he had continued his work at the London Hospital until a fortnight before. He was an able surgeon and a man learned in many directions; and the ending of his life at the early age of 53 will be deeply regretted by his associates and those who enjoyed his friendship.

The son of Walter Perrin, he was educated at the City of London School and at Cambridge, where he was a foundation scholar of Caius College, and was

placed in the first class in both parts of the Natural Sciences Tripos. At this time he had no intention of taking up medicine, and for ten years his attention was given chiefly to the study of protozoa. Beginning in 1900 with publication of researches on the life-history of one of the trypanosomes, he secured the Walsingham prize and the Shuttleworth research studentship, and in 1905 was appointed university demonstrator in zoology



MR. PERRIN

—a post he was to hold for five years. In 1910, at a stage when his career as a zoologist had already shown performance as well as promise, he was obliged to seek a more remunerative occupation, and he set himself to qualify as a doctor. To fulfil this end he had to support himself by teaching others, including fellow candidates, and his skill as coach won him a great reputation. While still a student he became demonstrator in anatomy at the London Hospital in 1910, and he continued this work until he qualified in 1912, winning on the way the surgical and medical scholarships—and incidentally maintaining his prowess as a boxer. House appointments followed, both at his own hospital and at Great Ormond-street, and the outbreak of war found Perrin surgical registrar at the London, where he had lately won the triennial Jonathan Hutchinson prize for an essay on intussusception. He had also become F.R.C.S. and had taken the Cambridge degree of master of surgery, and these qualifications brought him the command of the Belgian Field Hospital at Furnes, and later the post of surgical specialist in the R.A.M.C. with rank of major. Returning to the London after the war he became first assistant in the surgical unit, and in 1921 was elected to the staff. Besides his surgical work he continued for a time to lecture in anatomy, and he so far retained his interest in this subject that eighteen months ago he was invited to serve on the board of electors to the anatomy chair at Cambridge, where he was an examiner in surgery. A keen freemason, he was a member of the staff

of the Royal Masonic Hospital, and he was also consulting surgeon at King George's Hospital, Ilford, and the Finchley Memorial Hospital.

As a surgeon Perrin's interests turned increasingly to rectal diseases, and he held office as president of the subsection of proctology of the Royal Society of Medicine. Mr. Hugh Lett, to whom we are indebted for biographical details, writes that his "careful investigation of his cases, sound judgment, operative skill, and unremitting care, leavened with a full measure of kindly sympathy, brought him a reputation which may be estimated by the frequency with which his colleagues and other members of the profession sought his advice for their relatives or themselves. Ever alive to surgical progress he weighed each new theory or practice in the scales of a cautious criticism based on wide experience, and adopted what he found good." As a teacher "his retentive memory, his grasp of any subject that he studied, and his extraordinarily clear and simple exposition, illustrated by clever draughtsmanship, smoothed away the difficulties of his students, impressed essentials on their memory, and conjured an ordered sequence out of unintelligible chaos." The draughtsmanship was associated with deep interest in many forms of art, while the gift of logic had been fostered by the continuing study of Latin and Greek literature.

Mr. Perrin married Dorothy, daughter of F. P. Rafferty, and she survives him with three children. His eldest son has lately gone to Cambridge.

ROBERT ARTHUR ASKINS, M.D. Dub., D.P.H.

WE regret to record the death of Dr. R. A. Askins which occurred on his return journey to South Africa to resume his appointment as principal medical officer to the Government of Southern Rhodesia. Dr. Askins was born at Clonmore Rectory, Co. Louth, was educated at King's School, Warwick, and studied medicine at Trinity College, Dublin, where he qualified in 1907 with first-class honours. After residence at Sir Patrick Dun's and the Children's Hospitals, Dublin, he entered the public health service as assistant medical officer for Merthyr Tydfil, and then for five years assistant school medical officer for the County of Lancaster. In 1914 the Bristol education committee made him its first full-time medical officer and for ten years—with a break as specialist sanitary officer, 1915-19, with the B.E.F.—he organised the school service in Bristol with such ability that in 1924 he was appointed deputy M.O.H. for the city and port, and in 1928 succeeded Dr. D. S. Davies in that capacity, retaining also the school medical work in his hands. One of his particular interests was children's vision, and he made an important report on the age-incidence of myopia in public elementary schools. He had already taken the D.P.H. Camb. and had been admitted to the bar, and his organising ability prepared the way for the wide changes in Bristol hospital management resulting from the Local Government Act of 1929. His resignation in May, 1930, on appointment to Rhodesia, caused much regret in Bristol where he was universally respected. Outside his official work Dr. Askins was of a shy and retiring disposition, fond of rural life, and spending his leisure in the hills of Somerset and Gloucester. He leaves a widow and two young children.

ROBERT NESBITT, L.R.C.P.I., J.P.

Dr. Nesbitt, who died at Sutton-in-Ashfield, Notts, on Nov. 26th, in his eightieth year, had practised for over half a century in the town. A native of Corglass, Co. Monaghan, he received his early education at Ballybay. A leaning towards medicine brought him as a lad of 17 to the old Ledwich school of medicine in Dublin, where at the age of 21 he took the L.R.C.S.I., L.K.Q.C.P.I., and L.M. After three years as house surgeon at Monaghan Infirmary in 1882 he married and settled at Sutton-in-Ashfield, where he remained all his life, although he retired from

active practice in 1927. As M.O.H., district medical officer, public vaccinator, certifying factory surgeon, medical officer to the Post Office, railway companies, and collieries, and referee to several insurance companies he led a busy life. Nominated to the county bench in 1894 he was its chairman for some time. During the late war he presided over the local tribunal. He visited the U.S.A. on five occasions, partly to enlarge his family tree, and in 1930 he brought out privately a history of the Nesbitt family. Three years ago he celebrated his golden wedding. He leaves a widow, three daughters, and a son in the legal profession.

PUBLIC HEALTH

The Health of the School Child

THE annual report of the chief medical officer of the Board of Education is one of the most remarkable socio-medical products of our time. For twenty-seven years it has been signed by Sir George Newman; the report for the year 1934 which records work done under his direction and supervision is presented by Dr. Arthur MacNalty who is responsible for the report as a whole, although he states frankly in his introductory note that it is a composite document. It is in fact a series of monographs on various aspects of child life and of the relation of medical and social agencies thereto. An appendix to the report tells us who are the medical officers of the Board of Education who have contributed to it, although it does not enable us to associate the name with the chapter. The names are as follow: senior medical officer: Dr. J. Alison Glover; medical officers: Dr. Muriel Bywaters, Dr. A. H. Gale, Dr. J. E. A. Underwood, Dr. Robert Weaver, L.D.S., Dr. Ralph Williams (who is also chief examiner in hygiene), and Dr. Lilian Wilson. Dr. MacNalty calls special attention to the first two chapters on nutrition and physical training. It is, he remarks, important that full use should be made of the services of preventive medicine; otherwise zeal for either form of culture may outrun discretion. The tired brain of the child may be rested by diversion to more physical exercises and open-air recreation; but should the diversion be carried too far two body-systems may be overworked instead of one. Conversely the boy or girl who is overpressed in physical exercise or sport may suffer from exhaustion which reacts unfavourably upon mental capacity. Whatever form training may take it must be proportional to the age, sex, habits, circumstances, and state of health of the individual child or adolescent. In this important work, Dr. MacNalty concludes, the school medical officer should be able to render yeoman service.

In the chapter on nutrition it is said that whilst subnormal and bad nutrition (or malnutrition) are impossible to define precisely, yet it is not difficult for a medical officer of experience, tact, and common sense to make an assessment of a child's nutrition sufficiently accurate for practical purposes. In every collection of children however well-fed and circumstanced some, perhaps 4 per cent., will appear of subnormal nutrition. The fact that such children will always be found does not however invalidate the statement that the main factor in the production of subnormal nutrition in children is poverty. Poverty does not necessarily imply actual lack of food, but it is the root cause of nearly all the other factors which produce subnormal nutrition—overcrowding, lack of ventilation in sleeping quarters, lack of fresh

air otherwise, poor school buildings, short hours of sleep, lack of cooking facilities, high incidence of and delayed convalescence from infectious disease. Poverty powerfully influences the quality of the diet, cutting down the proportion of the protective foodstuffs—e.g., milk, eggs, butter, vegetables (especially green vegetables), and meat. Even the strain of home-work is undoubtedly greater the poorer the home, and it may be a "poverty" factor in the older children. It is good to note that in last Monday's circular to local authorities the Board of Education makes it clear that extra meals may properly be provided free "for any child who shows any symptoms, whether educational or physical, however slight."

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 7TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2698; diphtheria, 1317; enteric fever, 29; acute pneumonia (primary or influenzal), 838; puerperal fever, 32; puerperal pyrexia, 95; cerebro-spinal fever, 24; acute poliomyelitis, 5; acute polio-encephalitis, 1; encephalitis lethargica, 8; continued fever, 1 (Chorley, Lancs); dysentery, 39; ophthalmia neonatorum, 66. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 13th was 3387, which included: Scarlet fever, 1157; diphtheria, 1281; measles, 147; whooping-cough, 303; puerperal fever, 22 mothers (plus 13 babies); encephalitis lethargica, 279; poliomyelitis, 6. At St. Margaret's Hospital there were 17 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 27 (1) from measles, 2 (0) from scarlet fever, 14 (0) from whooping-cough, 36 (5) from diphtheria, 50 (13) from diarrhoea and enteritis under two years, and 45 (5) from influenza. The figures in parentheses are those for London itself.

Manchester reported 10 deaths from measles, Liverpool 6, Blackburn and Preston each 2. Liverpool had 3 fatal cases of whooping-cough, Birmingham and Nottingham each 2. The deaths from diphtheria were reported from 24 great towns: 8 from Liverpool, 2 from Carlisle, not more than 1 from any other large town. The mortality from influenza is scattered over 31 great towns. Liverpool reporting 3.

The number of stillbirths notified during the week was 237 (corresponding to a rate of 39 per 1000 total births), including 32 in London.

VICTORIA CENTRAL HOSPITAL, WALLASEY.—Lord Moynehan has opened new twin operating theatres at this hospital. Other recent improvements include the extension of the X ray department and the enlargement of the male ward. In all, the expenditure has been about £18,000.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Voluntary Hospitals (Paying Patients) Bill

IN the House of Lords on Dec. 10th Lord LUCKE moved the second reading of the Voluntary Hospitals (Paying Patients) Bill. The Bill received a second reading in the House of Commons last July, but there was no time, he said, for its passage through its later stages. In moving the second reading of the Bill now, he desired merely to clarify the considerations which animated those responsible for its introduction and to remove certain misconceptions.

The object of the Bill was to put all hospitals on a level so far as possible in their power to meet certain present-day needs. Voluntary hospitals with modern trust deeds had no legal hindrance to prevent them from providing for all classes who needed hospital treatment. Their primary function was to provide beds for the sick poor in the comparatively small number of pay beds for the black-coated poor of the term. They often provided a comparatively small number of pay beds for the black-coated poor and the middle and professional classes, who were not able to pay a moderate weekly charge, but could not afford what they would have to pay elsewhere. They sometimes also provided a still smaller number of beds for patients who needed treatment which, however well off they might be, those patients were often unable to obtain anywhere except at a hospital, and who were charged at rates appropriate to their means. The need of this new service resulted partly from the modern developments of later and expensive methods of diagnosis and treatment, and partly from recent economic changes which had produced what were called the New Poor. These new services had been provided in addition to and not in elimination of the maintenance and existence of the ordinary beds. In some hospitals the trust deeds were settled long ago when medical treatment was a very simple and inexpensive affair, and hospital accommodation was only needed by the very poor. The result was that at some hospitals these ancient trusts were so worded that the hospital could not legally provide for any patients of the term even with money specially original sense of the term for the purpose, and if the collected or received for to treat any other patients, pital had occasionally were unobtainable elsewhere, because the treatments were charge them what they it had no legal power to charge if it did not do it at were able to pay. Nor could it provide special accommodation for them even if it did not do it at a profit. It was certainly hard on the older hospitals not to be able to provide these modern facilities which some other hospitals could provide. It was also hard on particular neighbourhoods not to be able to enjoy those modern facilities which other neighbourhoods could enjoy.

The object of the present Bill was to give the Charity Commissioners power in suitable cases to remove these anomalies by enabling such hospitals to provide pay beds as long as it was not done at the expense of or to the detriment of the primary work which they were doing of providing for the sick poor. The Bill contained ample precautions against any risk that trusts for the direct benefit of the sick poor would be disregarded. In addition to the control given to the Charity Commissioners, there were special safeguards introduced in the Bill last session by the Government to ensure that funds could not be diverted to any other purpose. In actual practice experience showed that the provision of pay beds benefited the whole community, including the sick poor themselves. The hospital with pay beds served patients who would otherwise be unable to obtain the latest treatment and who then became grateful supporters. Patients who could afford to pay could be charged what they could afford, and there was then an actual profit which helped the hospital to

carry on its ordinary work. There could be no fear that anything in the Bill would enable hospitals to diminish their work for the sick poor, even if they wanted to do so. The safeguards in the Bill would prevent them from reducing their ordinary work, but the powers given by the Bill would assist them to increase it.

Viscount GAGE, speaking on behalf of the Government, said that when the Bill was first introduced the Government considered that, provided that certain precautions were put in with the object of maintaining the existing trusts, they could thoroughly support the measure. Those amendments to secure that the objects of the original trusts were maintained and the rights of the poorer patients were safeguarded, were agreed between the promoters and the Government and appeared in this Bill. In those circumstances the Government were fully in support of the Bill.

The Bill was read a second time.

Improvement of Health Services

IN the House of Commons on Dec. 10th Sir KINGSLEY WOOD, Minister of Health, replying to the debate on the Address, said that the health proposals were very germane to the discussion, because their plans were of very little value unless they were able to build on the foundation of a healthy nation. It was for that reason that the Government had given prominence in their programme to the importance of social and public health services. Referring to the Government's proposed legislation for the improvement of the midwifery service, Sir Kingsley said there was urgent need of a sound midwifery service to ensure to every woman who required it skilled care in childbirth. A Bill was now being drafted and the Government hoped to introduce it early next year. In the interval he would consult with the appropriate associations, including representatives of the important voluntary associations who were engaged in this important work. There were very obvious gaps in the system of health insurance between the time that boys and girls left school and the time when they entered into insurable employment. There was also the difficulty in the present national health insurance and contributory pension scheme that many people at work on their own account were unable to enter into the insurance and pension system although their circumstances did not differ from other insured persons. The Government would introduce legislation to deal with these important matters.

HOUSE OF COMMONS

WEDNESDAY DEC. 11TH

Restriction of Medical Licences in Palestine

MR. TOM SMITH asked the Secretary of State for the Colonies whether, in view of the protests of the Jewish agency against the restriction of medical licences in Palestine to persons who were naturalised and the fact that a number of Jewish doctors of German nationality were anxious to set up practice in Palestine, he would state the reason for the promulgation of the Ordinance restricting medical licences in this manner.—Mr. J. H. THOMAS replied: The Medical Practitioners (Amendment) Ordinance 1935, places no restriction on the number of licences to practise medicine which may be granted to Palestinian citizens by birth or persons who became Palestinian citizens or received permission to remain permanently in Palestine on or before Dec. 1st, 1935. The quota restriction imposed by the Ordinance affects only persons who became Palestinian citizens or received permission to remain permanently in Palestine after that date. Further, persons who will be employed solely in the practice of medicine in or on behalf of any recognised medical or scientific institution will be exempt from the quota. The reason for the enactment of this Ordinance

was that, in view of the great influx of medical practitioners in recent years, the profession was becoming overcrowded, a situation which had given rise to abuses, and had seriously affected the livelihood of established and reputable practitioners.

Colonel WEDGWOOD: Is the right hon. gentleman aware that the established recognised medical practitioners did not ask for this Ordinance, and that it affects merely the unfortunate refugees from Germany?

Mr. THOMAS: I am aware of the fact that there were a certain number of medical practitioners in Palestine, that owing to the unfortunate circumstances in Germany there was a large influx of others, and that those engaged in the medical profession asked for some protection for their position.

Medical Rejections of Air Force Recruits

Mr. POTTS asked the Under-Secretary of State for Air the number of persons who presented themselves for recruitment into the Royal Air Force for the year 1934 and the number rejected upon medical grounds or other causes.—Sir P. Sassoon replied: During the year ended March 31st, 1935, 16,389 definite applications for enlistment into the Royal Air Force were received: 7085 of these applicants were medically examined, 2786 were found medically fit and 2347 were attested.

THURSDAY, DEC. 12TH

Voluntary Hospitals in the Special Areas

Mr. STOREY asked the Minister of Labour whether the commissioner for the special areas was now prepared to make grants to the governing bodies of voluntary hospitals in the special areas towards the cost of the provision of new or the extension or alteration of existing hospitals or out-patient departments in the same way as he was prepared to make such grants to local authorities.—Mr. E. BROWN replied: Yes, Sir. The Commissioner is prepared to consider applications of this kind and to make grants on certain conditions.

Old Books and Infectious Disease in Schools

Mr. ANDERSON asked the President of the Board of Education how many school books under the control of the Cumberland Education Committee had been in constant use for one year, two years, three years, and over three years respectively; and whether his department had any particulars of the effect of the continuous use of old school books upon the spread of infectious diseases in schools.—Major DAVIES (Vice-Chamberlain of the Household) replied: My right hon. friend regrets that he has no information on the first part of the hon. Member's question. As regards the second part, while the continued use of old and soiled books in public elementary schools is to be deplored, my right hon. friend has no grounds for suspecting that infectious diseases have spread by that means.

Analgesia and Maternity

Sir ROBERT TASKER asked the Minister of Health if he was aware that a method of giving relief to women in their confinements known as gas-and-air analgesia had been in use for two years with unqualified success in the Liverpool Maternity Hospital and the Wellhouse Hospital, Barnet, and had now been adopted in a large number of hospitals throughout the country; and if he proposed to take any action to ensure that the use of gas-and-air analgesia would be encouraged in all hospitals under the control of the public health authorities.—Sir KINGSLEY WOOD replied: I am aware that the method mentioned by my hon. friend has been in use at the two hospitals referred to, and that favourable results are claimed for it. I understand also that an investigation of this and other methods is being carried out by the British College of Obstetricians and Gynaecologists, but no findings have yet been published. On my present information, I do not consider that I should be justified in taking any action in this matter, but the use of gas-and-air analgesia is within the discretion of the responsible medical officers of each hospital.

Rural Water-supplies

Sir CLIFFORD FOX asked the Minister of Health whether the full allocated subsidy of £1,000,000 for the improve-

ment of rural water-supplies had now been definitely distributed; and, if so, could he state, by counties, the aggregate allocated to each one of them.—Sir KINGSLEY WOOD replied: £801,177 has been provisionally allocated to 53 counties.

Protective Respirators and Gas Attack

Mr. ACLAND asked the Home Secretary whether His Majesty's Government knew of any gas mask capable of giving to the wearer complete protection against any probable concentration of every poisonous gas which was known to the Government; and were such gas masks available to the public or likely, in the near future, to become available to the public, and in what numbers and at what prices.—Mr. G. LLOYD (Under-Secretary, Home Office) replied: The whole subject of the arrangements to be made for the provision of respirators has been under close examination for some time past. It is hoped that it will be possible to make a full statement on this subject in the near future.

Repair of Dilapidated Dwellings

Mr. DAY asked the Minister of Health whether he was aware that many houses throughout the country were becoming uninhabitable through the neglect of the owners to put them in reasonable repair; and if he would consider the introduction of legislation compelling owners of house property to spend in repairs the percentage of rents they were allowed to charge.—Sir KINGSLEY WOOD replied: The Rent Restrictions Acts contain provisions enabling a tenant to withhold so much of his rent as represents the permitted increase if his premises are not in a reasonable state of repair, and in these circumstances I do not consider that further legislation is necessary.

Post-Vaccinal Encephalitis

Mr. BROAD asked the Minister of Health what steps were adopted with a view to bringing cases of post-vaccinal encephalitis under the notice of his department.—Sir KINGSLEY WOOD replied: Notices are published in the medical press requesting medical practitioners to notify my Department of all cases of post-vaccinal encephalitis. Information is also obtained from the returns made by public vaccinators, and by the examination of all death certificates on which any reference is made to vaccination.

MEDICO-LEGAL SOCIETY: ANNUAL DINNER.—The annual dinner of this society was held on Dec. 13th at the Holborn Restaurant, when the president, Mr. C. Ainsworth Mitchell took the chair. Sir William Wilecox, submitting the toast of "Medicine and Law," said it was increasingly desirable that the medical and legal professions should be drawn closer together, in view of the part psychology was now playing in the administration of justice, and the growing tendency to attribute wrongdoing, particularly in the juvenile delinquent, to some failure in the working of the mind. Lord Dawson, responding, said the need of both lawyer and doctor was to understand human nature. The ambit of medical thought having been extended to include the operations of the mind, the medical profession was now concerned with conduct. The linkage between body and mind was to be found in the internal glands; a slight increase in the thyroid secretion, or a slight decrease in the sex hormone might produce a change in conduct so notable as seriously to influence the doctrine of responsibility. He was in favour of the appointment of medical assessors to assist the judge in difficult cases. Mr. Claud Mullins, who also responded, declared himself as a law reformer, but a hopeless one at that, because the law seemed to be busy about everything except reforming itself. He regretted that in the higher courts there was no time between conviction and sentence for enlisting the help of medicine and psychology. "The Society" was proposed by Sir Edward Tindal Atkinson and acknowledged by the president, who said the society had now nearly 400 members. "The Guests" were toasted by Mr. E. R. Bolton; Mr. John Evans, president of the Society of Public Analysts, and Dr. Robert Hutchison responded.

MEDICAL NEWS

University of Oxford

On Dec. 14th the following degrees were conferred:—

B.M.—P. E. Cresswell, R. N. B. Cridland, H. N. Davis, H. Fidler, R. B. Hickey, E. C. O. Jewesbury, W. P. Mallinson, and F. G. Ward.

Royal College of Surgeons of England

A meeting of the council was held on Dec. 12th with Mr. Arthur Burgess, senior vice-president, in the chair. Mr. E. C. Hughes, Mr. L. E. C. Norbury, Mr. Robert Milne, and Mr. P. H. Mitchiner were elected to the court of examiners, and Sir Holburt Waring was reappointed representative on the court of governors of the University of Birmingham.

It was reported that Sir Cuthbert Wallace, the president, has been appointed a member of the general council of King Edward's Hospital Fund for London for next year.

Diplomas of fellowship were granted to the following candidates:—

Doris E. O'Doherty, M.B. Lond., M. N. Chatterjee, L.R.C.P., E. W. T. Morris, L.R.C.P., W. S. Creer, M.B. Liverp., J. K. Wilson-Pepper, M.B. Camb., I. W. Matheson, L.R.C.P., Dorothy A. Sharpe, M.B. Lond., D. K. Mulvaney, M.R.C.P. Lond., P. G. Scott, L.R.C.P., H. G. Arthur, M.B. Lond., P. B. Morozov, M.B. Liverp., K. J. Gilchrist, M.B. Lond., O. S. Tubbs, M.B. Camb., S. E. Birdsall, L.R.C.P. Lond., C. H. Gray, M.B. Manch., R. F. Winckworth, M.B. Lond., Philip Baron, M.B. Cape Town, Doris B. Brown, M.B. Leeds, R. V. Parne, M.B. Camb., V. C. Snell, M.B. Lond., T. M. Tyrrell, M.B. Camb., W. R. Hutchinson, L.R.C.P., S. G. Browne, M.R.C.P. Lond., J. F. Jarvis, M.R.C.P. Lond., L. C. Oliver, L.R.C.P., A. K. Price, M.B. Lond., P. P. Sheth, M.B. Bombay, John Grocott, M.B. Lond., R. H. R. Belsey, M.B. Lond., L. E. Jones, M.B. Lond., V. P. Gupta, M.B. Lucknow, Ibrahim Magdi, M.B. Cairo, B. H. Page, L.R.C.P. Lond., H. S. Shucksmith, M.B. Leeds, F. F. Rundle, M.B. Sydney, Garthoven Williams, L.R.C.P., M. A. Falcover, M.B. N.Z., A. S. Kerr, M.B. Liverp., Thomas Beath, M.D. Toronto, J. I. M. Black, M.B. Durh., A. N. de Quadros, M.B. Bombay, W. S. Diggle, M.B. Liverp., H. T. Fleming, M.B. Dub., S. R. Gerstman, M.B. Melb., L. W. Gleadell, M.B. Melb., A. O. Green, M.D. Melb., Muriel B. McIlraith, M.B. Sydney, Ismail Mehrez, M.B. Cairo, E. W. Peet, M.B. Durh., M. Z. Siddiqui, M.B. Bombay, J. B. Somerset, M.D. Melb., and H. K. Vernon, M.B. Durh.

A diploma of membership was granted to Dorothy J. Thompson.

Licences in dental surgery were granted to the following candidates:—

D. E. Ashdown, L. C. Bellsham-Revell, Elizabeth C. Boss, A. P. Britton, John Carnaghan, G. K. Catchpole, Marjorie L. Close, C. E. Colman, J. O. C. Daniels, J. L. Deuchar, Morris Dobkin, G. R. Down, Edward Dunstan, Ronald Edwards, Montgomery Featherman, A. C. Fraser, Peter Griffin, R. G. Gwynne, E. C. Hammond, N. A. Hawkins, C. E. Henn, R. O. Holland, D. A. Ibbetson, G. E. Jackson, J. G. Jones, J. C. Keay, S. B. Kendall, R. G. Kett, J. C. Lawson, D. W. Macfarlane, M. M. MacLachlan-Hillier, E. L. Moll, J. E. C. Peacock, F. H. W. Peatfield, P. V. Peatfield, R. A. Pepper, R. S. Pook, R. P. Powell, E. C. Redfern, H. P. L. Rhodes, Howell Richards, J. B. Rodway, J. E. Rydemark, Kenneth Sharp, N. A. Siggers, R. G. Simpson, T. A. Smitham, J. F. A. Smyth, P. W. Stanley, C. A. Stryer, Alfred Tarttelin, H. B. Thornton, A. F. Townend, P. A. Trotter, G. L. R. Welch, R. S. Wells, R. M. H. Williams, W. E. Wright, and Malcolm Wykes.

Diplomas in anaesthetics were granted jointly with the Royal College of Physicians to the following candidates:—

H. K. Ashworth, J. H. Attwood, Arnold Barnsley, C. A. Borland, Lorna Bray, H. J. Brennan, R. J. B. Broad, A. I. P. Brown, F. E. Cartwright, T. H. Chadwick, J. Davies, Winifred Dean, H. G. Dodd, N. A. F. Duggan, A. P. Gorman, R. B. Gould, H. F. Harrison, Gerald Hochschild, Mary J. Johnson, Alison R. Kerridge, L. H. Lerman, Antony Lucas, W. S. McConnell, Jean S. B. McNeil, S. V. Marshall, E. A. Marson, A. G. Miller, J. C. Nicholson, M. D. Nosworthy, E. A. E. Palmer, Brian Rait-Smith, E. H. Rink, F. W. Roberts, K. MacD. Ross, Doris M. Sanders, J. D. Scott, E. V. Slaughter, C. E. Sykes, Sheila C. H. Watters, J. H. West, Rose E. Williams, and F. C. Wright.

University of Sheffield

At a meeting of the university council held on Dec. 13th the resignation by Dr. Harold Leader of his post of lecturer in diseases of children was announced.

Faculty of Medicine.—Dr. J. W. McNee was appointed examiner in therapeutics and Prof. Daniel Dougal in obstetrics and gynaecology.

It was reported that the Rockefeller Foundation, New York, had made a grant of £200 in aid of research in the department of pharmacology.

University of London

At recent examinations the following candidates were successful:—

THIRD EXAMINATION FOR M.B., B.S.

S. O. Aylett, King's Coll. Hosp.; Joan W. Ellinger and Mary F. Lockett, Royal Free Hosp. (with honours); R. M. H. Anning, St. Mary's Hosp.; C. G. Baker, Guy's Hosp.; T. L. S. Baynes, St. Bart's Hosp.; E. R. Bennion, Westminster Hosp.; Katherine M. Blenkins, Royal Free Hosp.; C. J. F. Blumenthal, Guy's Hosp.; P. R. Boucher, St. Mary's Hosp.; Muriel G. Boycott, Univ. Coll. Hosp.; P. E. G. Clements, St. Bart's Hosp.; J. G. Clothier, King's Coll. Hosp.; J. H. Cobb, Univ. Coll. Hosp.; E. C. Cordeaux, Middlesex Hosp.; Robert Cox, Westminster Hosp.; J. V. Dacie, King's Coll. Hosp.; D. V. Davies, Univ. Coll. Hosp.; D. G. ff. Edward, St. Bart's Hosp.; J. A. C. Franklin, St. Thomas's Hosp.; L. D. B. Frost, St. Bart's Hosp.; B. M. Goldsworthy, St. Thomas's Hosp.; K. L. Grozono, London Hosp.; E. A. Hardy, Westminster Hosp.; K. W. Hardy, London Hosp.; D. B. Hyslop, Charing Cross Hosp.; J. D. Jenkins, Middlesex Hosp.; H. S. Joseph, St. Bart's Hosp.; Charles Langmaid, Univ. Coll. Cardiff; K. A. Latter, St. Bart's Hosp.; J. I. Leeb, St. Thomas's Hosp.; J. L. Lewis, London Hosp.; M. J. Lind-ey, Guy's Hosp.; H. M. McGladdery, St. Bart's Hosp.; W. N. Mann, Guy's Hosp.; J. I. C. Mason, St. Bart's Hosp.; W. R. Merrington, Univ. Coll. Hosp.; Tudor Miles and R. L. Moody, St. Thomas's Hosp.; C. J. B. Murray, Middlesex Hosp.; Howard Nicholson, Univ. Coll. Hosp.; W. L. Ogle, Guy's Hosp.; C. J. S. O'Malley and D. A. O'Reilly, St. Thomas's Hosp.; G. H. C. Orens, St. Mary's Hosp.; W. D. Park, St. Bart's Hosp.; F. D. Paterson, St. Mary's Hosp.; Eric Pereira, St. George's Hosp.; H. N. Perkins, St. Mary's Hosp.; J. B. Phillips, Univ. Coll. Cardiff; F. O. Potter, Guy's Hosp.; W. A. Pritchard, Univ. Coll. Hosp.; J. D. Richardson, King's Coll. Hosp.; Jean Ross, Univ. Coll. Hosp.; Millicent I. Rowland, Royal Free Hosp.; P. N. Shuttle, St. Thomas's Hosp.; Isidore Sloane, London Hosp.; B. W. Smith, Guy's Hosp.; J. G. Stewart, Westminster Hosp.; J. M. Stewart, St. Bart's Hosp.; Margaret J. Sutcliffe, Royal Free Hosp.; J. W. Todd and B. McN. Tru-cott, Middlesex Hosp.; C. E. G. Wickham, St. Thomas's Hosp.; Helen E. Wight and Sheila M. R. Williams, Royal Free Hosp.; J. W. Wishart, Victoria Univ. of Manchester; A. L. Wiman, Univ. Coll. Hosp.; and E. C. Zorab, Guy's Hosp.

The following candidates have passed in one of the two groups of subjects:—

Group I.—G. T. Balean, H. L. W. Beach, L. C. Bousfield, F. E. Corea, A. G. Edwards, G. J. Evans, J. E. Giesen, W. H. Hamilton, D. T. K. Harris, Sylvia A. M. Herford, H. G. Howitt, L. M. Kelly, E. A. Knappett, H. A. Leggett, O. G. Lloyd, Queenie I. E. May, Elizabeth M. Morgan, F. J. Napier, S. G. Nardell, R. J. Niven, E. P. Rigby, R. S. F. Schilling, G. R. Taylor, W. R. Welpy, and Rowena Woolf.

Group II.—Charles Anderson, F. W. Baskerville, H. V. Brown, Kathleen E. Burnell, H. B. C. Carter-Loocke, Thomas Denness, J. E. Elliott, W. D. F. Lytle, J. McA. McArthur, E. G. Murphy, N. W. N. Murray, K. L. G. Nobbs, Dorothy S. Pope, D. A. Prothero, J. C. Roberts, E. ap I. Rosser, H. C. Thomas, Winifred J. Wadge, Alan Wardale, and E. D. H. Williams.

Aaron Meyer has passed in Part I. of the examination for the diploma in medical radiology.

University of Bristol

At recent examinations the following candidates were successful:—

FINAL EXAMINATION FOR M.B., CH.B.

V. T. Baxter, Theodora M. Crabtree, J. G. Field, Irene G. Hamilton, and M. A. Nicholson.

University of Manchester

Mr. V. F. Lambert, hon. laryngologist to the Manchester Hospital for Diseases of the Chest and Throat, has been appointed lecturer in diseases of the ear.

At recent examinations the following candidates were successful:—

FINAL EXAMINATION FOR M.B., CH.B.

Part II.—Jack Cohen, F. P. Ellis, William Fielding, G. D. Harthan, Henry Hempling, Ralph Mallinson, Annie Nelstrop, H. P. B. North, C. S. Parker, J. N. Shepherd, Bernard Thornley, and J. R. Wardley.

Part I.—Cyril Berens, Hélène E. K. Booth, Hilda Brice, A. H. Gregson, G. M. Komrover, W. H. Purves, and M. B. D. Welland.

Royal Institution

The subject of this year's Christmas lectures for young people is photography, and they will be given by Mr. C. E. K. Mees, D.Sc., on Dec. 28th, 31st, Jan. 2nd, 4th, 7th, and 9th, at 3 p.m. The address of the Royal Institution is 21, Albemarle-street, London, W.1.

Dr. A. G. B. Smart, senior medical officer of the Island of St. Vincent, has been appointed an official member of the executive council of the island.

Port Talbot Hospital

On Dec. 6th Lady Pollington opened the new administrative block of the Port Talbot and District Hospital, which is linked by a corridor to the main building. It includes a large sitting-room and a lecture-room for nurses.

Dairy and Ice Cream Exhibition

The sixth National Dairy and Ice Cream Convention will be held at the Crystal Palace from Jan. 28th to 31st, 1936.

St. John's Hospital for Diseases of the Skin

The out-patient department of this hospital is moving from 49, Leicester-square to larger premises at 5, Lisle-street, W.C. The new premises will be open to patients on Jan. 1st.

A Museum of Toys

The Institute of Medical Psychology, Malet-place, London, is making a permanent collection of toys from all the races of the world. Such a museum, it is thought, will be of value to the psychologist and anthropologist in tracing the early phases of social development. The Institute is receiving assistance from the Educational Branch of the Colonial Office, whose teachers in remote parts of the world select suitable exhibits from their particular area. Members of the public who can in any way help in the formation of the collection are invited to communicate with the secretary of the Institute. The toys most needed are those with an essentially national character, particularly English toys of individual non-mass-production type.

Epsom College

The 58th annual meeting of the Old Epsomian Club was held on Dec. 12th at the Hotel Great Central, with Mr. J. Norman Eggar (O.E. 1902) in the chair. Ninety-five other Old Epsomians were present, including six honorary members, and among the guests were Lord Leverhulme, president of the College, Dr. John Fawcett, treasurer, Dr. Henry Robinson, vice-chairman of the Council, Dr. H. K. D. Spitta, chairman of the executive committee, and Dr. J. A. Drake, dean of King's College Hospital medical school. As befitted the occasion, the toast list was short and the speeches brief and to the point. Sir Cosmo Parkinson proposed the health of the chairman, who, in reply, told all about cricket matches before himself proposing the toast of the evening, "Floreat Epsomia," coupled with the name of the headmaster, Rev. A. C. Powell, whom he consoled with a remark that he knew what little devils boys could be but parents could be an even greater trial. Mr. Powell spoke of two knighthoods conferred on Old Epsomians—Cosmo Parkinson (O.E. 1906) and A. J. Suenson-Taylor (O.E. 1912)—and of an even closer association between Old Epsomians and the present school by setting apart the second Saturday in July as an Old Boys' Day. Dr. Daniel Twining (O.E. 1903) proposed "The Guests" with great ingenuity, and three of them replied, Mr. John Niven, chairman of the Baltic, Dr. Fawcett, who said he had never heard so many apocryphal stories in one evening before, and Dr. Drake, who said there had never been so many openings for young doctors as there were now.

Vacancies

For further information refer to the advertisement columns

Army Dental Corps.—Commissions.
Banbury, Horton General Hospital.—Res. M.O. At rate of £150.
Bath, Royal United Hospital.—H.P. At rate of £150.
Bournemouth, Royal National Sanatorium for Consumption, &c.—Asst. Res. M.O. £200.
Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.
Canterbury, Kent and Canterbury Hospital.—Two H.S.'s Each at rate of £125.
Connaught Hospital, Wallhamston, E.—Cas. O. £100.
Crickton Royal, Dumfries.—Res. third Asst. Phys. £350-£500.
Dorchester, Dorset County Hospital.—H.S. At rate of £160.
Dover Royal Victoria Hospital.—Res. M.O. £180.
Durham, County Council, Education Dept.—Asst. School. M.O. £500.
Eastbourne, Princess Alice Memorial.—Two Hon. Surgeons. Also Res. H.S. £150.
Eastbourne, Royal Eye Hospital, Pevensey-road.—H.S. £100.

Exminster, Devon Mental Hospital.—Jun. Asst. M.O. and Pathologist. £350.
Glamorgan County Mental Hospital, Bridgend.—Jun. Asst. M.O. £350.
Great Yarmouth General Hospital.—H.S. £140.
Hammersmith Metropolitan Borough.—Two Asst. M.O.'s. Each £500.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. At rate of £50.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100.
Hull Royal Infirmary.—Res. Surg. O. £200.
Ilford, West Ham Mental Hospital, Goodmayes.—Jun. Asst. M.O. £350.
Kent and Canterbury Hospital.—Hon. Dermatologist.
Leeds Public Dispensary and Hospital.—Hon. Anaesthetist. Also Hon. Clin. Assts.
Leicester City General Hospital.—Jun. Asst. M.O. £300.
Liverpool Royal Children's Hospital, Myrtle-street.—Two Registrars and Tutors. Each at rate of £50.
London University.—Readership in Surgery. £800-£1000.
Manchester, Ancoats Hospital.—Res. Surg. O. £200. Also Med. Reg. £50.
Manchester Royal Children's Hospital, Pendlebury.—Res. M.O. At rate of £125.
Manchester, Withington Hospital and Institution, &c.—Jun. Asst. M.O.'s. Each at rate of £200.
Maudsley Hospital, Denmark Hill, S.E.—Research Fellowship in 1.—Tuber. M.O. £750.
Greenwich-road, S.E.—Hon. Dental

Newcastle-upon-Tyne Royal Victoria Infirmary.—Asst. to National Radium Centre. £250.
Rochdale Infirmary and Dispensary.—Sen. H.S. £250.
Royal Waterloo Hospital for Women and Children, Waterloo-road, S.E.—Hon. Clin. Asst. for Ophth. Dept.
St. John's Hospital, Lewisham, S.E.—Clin. Asst. to M.O. in Elec. and Massage Dept.
St. Mary's Hospital Institute of Pathology and Research, W.—Research Studentship. At rate of £200.
St. Thomas's Hospital, S.E.—Obstetrician and Gynaecologist.
Salford Royal Hospital.—Orthopaedic Reg. £100.
Samaritan Free Hospital for Women, Marjibone-road, N.W.—Radiologist.
Sheffield, Jessop Hospital for Women.—Sen. Res. O. Also two H.S.'s. At rate of £150 and £100 respectively.
Shoreham-by-Sea, Southlands Hospital.—Jun. Asst. Res. M.O. £250.
Southampton Borough General Hospital.—Jun. Res. M.O. £200.
Stirling District Mental Hospital, Larbert.—Third Asst. M.O. £250.
Sunderland Children's Hospital.—H.S. £120.
Westminster Hospital, Broad Sanctuary, S.W.—Three Surg. Regs. Each £250.
West Sussex County Council.—Asst. Tub. O. and Asst. M.O. £750.
Wolverhampton Education Committee.—Asst. M.O. £600.

Births, Marriages, and Deaths

BIRTHS

KINGSTON.—On Dec. 15th, at Leeds, to the wife of Frank E. Kingston, M.B.—a son.
PATERSON.—On Dec. 13th, the wife of Arthur Spencer Paterson, M.D., M.R.C.P., of Hildenborough, Kent, of a daughter.

MARRIAGES

ALEXANDER-MACKINNON.—On Dec. 12th, at St. Mark's, North Audley-street, Paul Creighton Alexander, B.M., B.Ch. Oxon., of Byfleet, Surrey, to Helen Oswald, only child of Mr. Alpin D. Mackinnon of Limsfield, Surrey.
KAUNTZ-MOODIE.—On Dec. 10th, at St. Paul's, Knightsbridge, Dr. Ralph Kauntze, to Katherine Margaret (Peggie), daughter of Mr. Ramsay Moodie of Guildford.
MITCHELL-NICOLSON.—On Dec. 11th, at St. Raphael's, Surbiton, Thomas Carlyle Mitchell, M.D., to Betty Baber Nicolson.
ROBB-SEABROOK.—On Nov. 6th, George Douglas Robb, M.D. (N.Z.), F.R.C.S. Eng., 41, Symonds-street, Auckland, N.Z., to Helen, third daughter of Mr. A. D. and the late Mrs. Seabrook of Auckland.
THURSTON-BARBEE.—On Dec. 14th, 1935, Garin Thurston, M.R.C.S., L.R.C.P., to Ione, only daughter of J. T. Barber, Esq., J.P., at St. Paul's, Winchester Hill.

DEATHS

AITKEN.—On Dec. 8th, suddenly, at Lagos, Nigeria, Andrew Blair Aitken, M.B. Glasg., F.R.C.S. Eng., Consulting Surgeon to Nigerian Medical Service.
CROSS.—On Dec. 6th, at Oxford, David Kerr-Cross, M.B. Glasg., late of id Natal, aged 78.
HERN.—On Dec. 11, idence, Beaconsfield, George Hern, 1.
OWEN.—On Dec. idnfirmay, Liverpool, M.R.C.S. Eng., of Albert Harold id Lanfairfechan, late Director of Medical and Sanitary Services, Tanganyika, aged 55.
ROXBURGH.—On Dec. 12th, at Seymour-street, W., David Roxburgh, M.B. Glasg., aged 74.
SOMERS.—On Dec. 5th, 1935, at The Grange, West Bromwich, Noble Luke Usher Somers, L.R.C.S.I., aged 73.
WOOD.—On Dec. 11th, at Manor House, Nunceaton, Alfred Arthur Wood, M.D. Liverp., aged 62.
N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

EDWARD ATSLOWE, M.D.

By R. R. JAMES

THE surname Atslove is uncommon. In Marshall's "Genealogist's Guide" the only entry at all resembling it is "Attslow," with a reference to Morant's "History of Essex." On consulting Morant (vol. i., p. 205). I find: "Henry Attslow, gent., son and heir of Edward Attslow, M.D.," as dying May 26th, 1622, possessed of the manor and advowson of Downham Kirby. in "Winchester Scholars," gives two Atslows: Ambrose and Edward; he also gives a Luke Atslove, who as a matter of fact was the younger brother of Edward.

Mr. Herbert Chitty, Bursar of Winchester College, has enabled me to give the entries from the original register of scholars which Kirby used when compiling his Roll. They are:

1547. Edwardus Atslove de Eversholde, Lincolnensis Diocesis XI annorum in festo Michaelis preterito. A marginal note gives: rec. Oxon.*

1549. Lucas Atslooe, de Eversholte comitatu Bedfordie IX annorum in festo Natalis Domini preterito. Lincolnensis (Diocesis). A marginal note gives: rec. Oxon. artium magister.

1589. Ambrosius Atslove, Sancti Oliveri (sic) London. 10 annorum. I, Maii preterito. London (Diocesis).

Kirby gives the following note under Edward's name: "Scholar New Coll. M.D. Fell. 1553-62. Removed by Queen's Commissioner." Luke appears to have been removed in 1568 because he had refused to take Holy Orders within the time laid down by the College Statutes. Foster ("Alum. Oxon.") gives Edward's degrees as follows: B.A., 1555. M.A., 1559. B.Med., 1564. D.Med., 1566. Munk ("Roll of the Royal College of Physicians") states that Edward Atslove was "on the 22nd August, 1554, actually created doctor of physic. in the house of Dr. Henry Baylie, situated in the High Street, leading to the Quadrivium, by Dr. Thomas Francis and him, the said Dr. Henry Baylie, by virtue of a commission directed to them by the Venerable Convocation." Atslove was one of four men (three of them physicians) specially appointed by Convocation to dispute before Queen Elizabeth when she came to be entertained at the University in the early part of September of that year.

Dr. Atslove was elected a Fellow of the Royal College of Physicians between 1565 and 1569. The exact date is uncertain as the records are defective for those years. He was appointed censor in 1569 for three years, and was named elect in 1572 and consiliarius in 1572 and 1583. On Nov. 2nd, 1573, he was married, at Stoke Newington, to Frances Wingfield. He was dead by May 28th, 1594, when his place as elect was filled by a much more distinguished Wykehamist, Dr. Christopher Johnson, the ex-headmaster of Winchester, well known as a poet.

Atslove was an ardent Catholic and partisan of Mary, Queen of Scots. He was twice imprisoned (in 1579 and 1585 according to the "Dictionary of National Biography") for having taken part in designs for her escape; and in a letter from Thomas Morgan to the Queen of Scots we read: "I hear that Dr. Atslove was racked twice, almost to death, in the Tower, about the Earl of Arundell his matters, and intention to depart England." Munk, from whom this is taken, says that the Earl, who died in 1595, settled an annuity on the doctor's widow.

In the "Calendar of State Papers (Domestic) Eliz." (vol. cxxxi.) occurs: 1579. June 15. Examin. of Thos. Asseley taken before Eustace Clorill esq., J.P., Essex, touching certain evidences conveyed away by Mrs. Field from Dr. Atslove's house after his apprehension.

* "Rec. Oxon." usually implies that the scholar left Winchester for Oxford to become a scholar of New College.

Dr. Atslove died intestate. Administration of his estate was granted on May 6th, 1594, to his widow, Frances. In the margin of the record is noted, "Parochie Sancti Olavi Silverstrete." This admon was granted in the probate court of the archdeacon of London (A.B., 2.148). In the third volume, p. 19, we get the compotus of the goods of Dr. Atslove on May 12th, 1595. Here he is given as of St. Olave, Hart-street. The estate seems to have been worth £361 16s. 2d.

Frances Atslove died towards the end of the year 1605. I am indebted to Mr. Herbert Chitty for the notes of her will, which follow:

Fraunces Atsloe of Downham, Essex, widow. Dated 25 Aug., 1605: proved 3 Dec., following. (P.C.C. Hayes, 89.) She desires to be buried in the parish church of Clerkenwell, near London, next to the grave where her husband was buried. She mentions her daughters Anno and Mary Atsloe; her eldest son, Henry Atsloe, her daughter Frauncis, wife of Sir Edward Frauncis, of Petworth, Sussex, Knt., and their daughter Bridget, her grandchild; her son Edward Atsloe and her son, Ambrose Atsloe, to whom she bequeathes her lease in London which she held of New College, Oxford; and her grandchild, Edward,† son of her son, Henry.

She appointed as her executors her "deare frende Mr. Doctor Oxenbridge"‡ and her son-in-law Sir Edward Frauncis. The latter proved the will.

Henry's son Edward was admitted pensioner (aged 15) at Peterhouse in 1616. He was admitted at Gray's Inn in 1618-19, and was later of Downham.

I am greatly indebted to Mr. Chitty for his generous help, and I owe to Mr. Harvey Bloom the notes on the admon of Dr. Edward.

POSSIBLE CHRISTMAS PRESENTS

Mr. H. A. Reason's ROAD TO MODERN SCIENCE¹ starts in ancient Egypt and takes us down to our own times. It is largely biographical and the reader learns about astronomy, for example, by learning about Copernicus and his successors. The contribution made to science by many different people is briefly described and we are reminded of what familiar names stand for. More than that, we are reminded of elementary principles on which the modern world is founded. While the book could be read by any well-educated person, it is particularly suited to the needs of those who have been trained in science but find it hard to explain exactly how an internal combustion engine or a barometer works. A good account is given of "waves of many kinds," but it is necessarily brief and can serve only as an introduction to such books as Prof. Andrade's brilliantly simple account of the structure of matter and radiation issued by the same publishers a few years ago.² Mr. Reason's survey is nevertheless a remarkable essay in condensation, and he is always interesting. He is shaky on the principles of immunisation (p. 243) and we do not agree that wireless waves have no effect on the human body, that Lord Lister was a Scotsman, or (unfortunately) that "to-day almost every disease, if taken in time, can be cured." But his book should appeal to many a medical man or serious-minded boy.

From the history of science we turn to the science of history, as exemplified by the reconstruction of

† The death of Henry Atslove has been given as beginning of this paper. His son Edward was 21 years of age at his father's death young, for Henry's daughter, Helen, inherited Downham and carried it in marriage to Sir Wm. Andrew, Bt., whose son, Sir Francis, sold the estate in 1698. (Morant's "Essex.")

‡ Daniel Oxenbridge. See Munk's "Roll," vol. i., p. 193.

¹ The Road to Modern Science. By H. A. Reason, B.Sc. London: G. Bell and Sons Ltd. 1935. Pp. 306. 6s.

² The Mechanism of Nature. By Prof. E. N. C. da Andrade, D.Sc. London. 1930.

JOAN OF ARC³ from a confusing mass of documents and legend. Those who have read Dr. C. McLaurin's study of Joan in "Post Mortem" will find that Mr. Milton Waldman makes her personality seem less pathological and therefore perhaps more interesting. The voices and visions, he holds, must be considered in relation to the intense religious atmosphere of the period, and he believes that "by every familiar test, medical and historical, she was a healthy and rational person." Nor does he dismiss her, as others have done, as a mere mascot with the French armies: on the contrary, her disrespect for the fatuous military conventions of the period made her intrinsically valuable. Mr. Waldman is a historian, not a writer of romances; but his vivid narrative leaves an impression of great heroism in the young girl's final struggle to win justice or mercy from the theologians of her church. "An English lord present as a spectator exclaimed after one of her answers, 'There's a fine woman; what a pity she isn't English.' It was the highest, the immemorial tribute of his race. . . ."

Waldman regards Joan of Arc as essentially a French peasant: William Cobbett considered himself a typical English one. In PETER PORCUPINE⁴ Marjorie Bowen describes the astonishing life of this ploughboy, sergeant-major, bookseller, pamphleteer, publisher, editor, historian, reformer, and agricultural innovator. Cobbett entered public life as a literary thorn in the side of the radicals: he ended it as a diehard opponent of the Industrial Revolution and the City, a champion of the People, and the collaborator with Wakley of THE LANCET in a House of Commons resolution of protest against the iniquities of the new poor-law. Miss Bowen's book shows how badly the People needed champions in the early decades of last century, and Cobbett with his tireless and ruthless invective takes his place in the history of reform. But if he was the typical Englishman it is not surprising that English honesty should sometimes be suspect. The sworn foe of every kind of public corruption and jobbery, he found nothing shocking in his own repeated bankruptcies or his failure to repay his friends. The advocate of mercy, he approved of bull-baiting; the persistent exponent of good sense, he never seemed to bother about other people's points of view. The brutal pamphleteer was also the author of "Rural Rides." Miss Bowen does her best to get consistency into the portrait, but her sympathetic intentions sometimes break down in face of the man's eternal self-satisfaction. This, and his vitality, and his amiable wife, were presumably the cause of his almost unquenchable happiness.

CALCULUS OF THE SUBMAXILLARY GLAND

THE forming of a calculus in the submaxillary gland may be quite unsuspected. Grandclaude and Driessens (*Echo méd. du Nord.*, 1935, iii., 651) divide its clinical course into three phases: the period of latency; the period of manifestation, in which the calculus produces pain or functional disorders such as acute salivary retention; and a period of complications. The glandular substance reacts to the presence of the stone by sclerosis and inflammatory change. Abscess-formation is common, but even without it chronic or subacute inflammation leading to generalised sclerosis seems to be an almost inevitable outcome. This commonly affects all parts of the gland, and so far destroys its secretory tissue as to make it functionally inactive; also it may make it so hard as to be mistakeable for a tumour or even for an osseous lesion of the jaw. Grandclaude and Driessens conclude from their histological investigations that complete extirpation of the gland is fully justified, and they think that too much care need not be taken to save it in operations for calculus. But the dense adhesions outside

the gland proper may make excision very difficult. The site of operation is always infected, and should be drained.

In the production of the calculus, Grandclaude and Driessens think that infection plays the greatest part; other suggested factors include high concentration of mineral salts in the secretion, the sinuosity of Wharton's duct, an abnormal reaction of the tissue fluids of the gland, and the presence of a true foreign body. They have found amorphous debris within the lumen of the small ducts, either forming a plug, or attached, apparently, to the wall. The plug is formed of protein material, with a nucleus of epithelial debris, of blood-cells, and of micro-organisms: from its staining reactions the substance appears to be undergoing calcification. By the side of a macroscopic calculus they have demonstrated a true microscopic stone, with calcareous granules at its core. Calcium phosphate is the main mineral deposit found in these calculi, with traces of calcium carbonate. The change in the gland, at any rate, does not seem to be localised to the site of a stone, but to be generalised. The organisms appear to gain entrance along Wharton's duct, and first to give rise to a pericanalicular inflammatory reaction.

The early and less conspicuous symptoms of calculus are slight intermittent pain, discomfort in movements involving the floor of the mouth, and slight trismus. "Salivary colic," acute salivary retention, and hernia of the salivary gland are more unmistakable signs which come later. Abscess-formation may lead to fistula into the mouth or through the skin, and Ludwig's angina may follow the extraglandular spread of the process.

ABORTION

THREE essays on abortion¹ provide an interesting demonstration of how by skilful handling the same facts may be used to plead diametrically opposite cases. Of the authors, Miss Browne is in favour of the unrestricted legalisation of abortion based on the Russian plan, Mr. Ludovici condemns abortion wholesale, while Dr. Harry Roberts steers a middle course and considers that it should be legalised in certain circumstances. It is significant that in the opinion of the first author the decision for or against abortion should ultimately rest with the woman; in that of the second, with the State; and, in that of the third, with a jury of doctors. Adjustment of the present law on abortion is probably inevitable in many countries, and those who seek the solution of the problem in the formulation of a sane compromise will find this presentation of divergent views well worth reading.

LIGHT TREATMENT FOR MASSEUSES

A BOOK designed to supply their need has been written by Dr. E. M. Anderson, who gives clearly information which is necessarily dogmatic. Granted that prolonged courses of actinotherapy are to be given by masseuses, without medical supervision of the patient at regular intervals, it may be necessary for the operator to be acquainted with the signs of the disease treated and to be able to estimate progress by reference to a text-book. But the supply of a clearly written dogmatic book on this subject for the use of masseuses² has its dangers. No one who has not had a general medical training should, except under constant medical supervision, treat cases showing definite deviation from the normal, whether of metabolic disorders, respiratory disorders, skin diseases, or even "chronic rheumatism." It is not enough to warn non-medical operators against treating tuberculosis in all its forms, for it is the undiagnosed case, the early phthisical patient, who is most likely to suffer

³ Joan of Arc. By Milton Waldman. London: Longmans, Green and Co., Ltd., 1935. Pp. 331. 12s. 6d.
⁴ Peter Porcupine. A Study of William Cobbett. By Marjorie Bowen. London: Longmans, 1935. Pp. 312. 10s. 6d.

¹ Abortion. By F. W. Stella Browne, A. M. Ludovici, and Dr. Harry Roberts. London: George Allen and Unwin, Ltd., 1935. Pp. 143. 4s. 6d.

² The Essentials of Light Treatment, for the use of Masseuses. By Elizabeth M. Anderson, M.D., B.S. Durh., Lecturer on Ultra-violet Rays to the School of Massage, Middlesex Hospital. London: Baillière, Tindall and Cox, 1935. Pp. 81. 5s.

if he is treated thus for wasting or for anaemia. Again, the chronic lumbago case may have an unrecognised renal lesion. Dr. Anderson has failed to point out these things with sufficient emphasis in her manual for masseuses. With this important reservation the book may be recommended to those who wish to become acquainted with the elements of actino-therapy. In the procedure recommended, preliminary "test-doses" are not insisted upon, before exposures of larger surfaces for treatment. They are, however, a simple means of estimating the patients' tolerance to some of the effects of ultra-violet treatment and avoid unpleasant accidents with very small trouble to the operator.

CHAMPION OF ANIMALS

SYMPATHY is curiously related to size. Down to a point, the smaller the animal the more it excites our kindness. "Dear little squirrel," we say to our children with conscious humanity. The claims of animals below a certain bulk, however, are apt to seem negligible; few say: "dear little earwig." Similarly, when animals become too large they stray beyond the scope of our affections. Some of us even find the horse an unpredictable creature and no one sympathises much with the hippopotamus. The University of London Animal Welfare Society, however, is concerned alike with great and small, and in this year's issue of the "Animal Year Book" (vol. iii.) the claims of the musk-rat and the whale receive equal attention. Whales, indeed, were in grave danger of extermination, until the League of Nations convention for the regulation of whaling, of 1931, became international law in January of this year. The convention provides against the killing of calves and suckling whales, and requires that full use should be made of the carcasses of whales taken. These measures have come none too soon for we are told that:

"Four kinds of Right Whales, and the Pacific Grey Whale are all at vanishing point, the Sperm Whale and the Humpback are certainly found scattered sparsely throughout the oceans of the world, although they remain but a fraction of their former tens of thousands, whereas the Rorquals, after being decimated in northern waters, are now being slaughtered at the rate of thirty thousand per annum in the Antarctic."

This volume deals also with oil pollution of coastal waters which does much injury to sea-birds; with the use of electric anaesthesia (still in its experimental stages); with humane education; and with the lot of animals abroad. The account of work for the protection of animals in North Africa revolves about the almost legendary figure of Mlle. Ruperto. This lady, an Italian by birth, has, by astonishing evangelism and feats of courage, done much to improve conditions of life for donkeys, dogs, cats, and farm animals in Algiers, where she is now the secretary-general of a newly formed branch of the R.S.P.C.A. and has succeeded in making things difficult for the organisers of bull-fights.

We have commented before on the refreshing absence of sentimentality in the publications of the University of London Animal Welfare Society, and this volume comes well up to standard. The Fougasse cover of a fat man drawn by a diminutive straining donkey, as usual, touches the spot at the outset.

CONTRACEPTIVE METHODS

Two small books¹ have recently been added to the rapidly increasing number of publications on contraception. Dr. White's book is full of facts, useful to those in search of propaganda in favour of birth control, which he has collected from numerous sources and set out in a readable way. The book would have been of more value if conflicting views

and evidence had been weighed and discussed in a completely unbiased manner. Dr. White shows a tendency to suggest that birth control and sterilisation are the panaceas for most human ills.

Dr. Malleon's book is a manual on birth control methods, as used chiefly in the clinics in this country and by herself in general practice. It contains many valuable suggestions on how to deal with patients, and above all, gives the practical points on how to choose the correct cap and to teach women to use it. This is an aspect of the subject inadequately dealt with in many larger books, and for this reason as well as for its general good sense, Dr. Malleon's book is to be commended to practitioners wishing to familiarise themselves with sound contraceptive techniques and their application. In an appendix she gives a brief summary of the present position of the birth control movement in this country, and a list of voluntary clinics and of local authorities who have taken some action in the matter. She also supplies a list of reliable commercial products, pointing out (p. 64) that the list will need constant revision and that up-to-date information on sound contraceptives can always be obtained from the National Birth Control Association, 26, Eccleston-street, S.W.1.

THE CATECHISM SERIES

THOSE medical students who have been brought up from their earliest years to consult the Catechism as to their chief end (among other problems), and to memorise the official answers, may well have developed a conditioned reflex which leads them to a special appreciation of the question and answer type of book. The Catechism Series issued by Messrs. E. and S. Livingstone, of Edinburgh, at 1s. 6d. each, covers 27 subjects of the medical curriculum, alphabetically from anatomy to zoology. Many of the important subjects are divided into several parts; for example, five booklets each are allocated to medicine, pathology, and surgery, and six to anatomy. The most recent batch issued consists of histology, anatomy (Part III.), physiology (Parts III., IV., and V.). These little books are frequently revised and kept well up to date; some of them, whose subjects lend themselves fairly well to this method of revision, are in their fifth edition.

THE LIGHTER SIDE OF MEDICINE

THIS small book,¹ written in a humorous and vulgar style, will give entertainment to doctors as well as patients. Quoting Oliver Wendell Holmes, the author reminds us that "Mirth is God's Medicine," and argues that disease is apt to be regarded too solemnly by both doctor and patient. For this he holds the doctor chiefly to blame. "The invalid's day can be divided roughly . . . into two parts: (a) the period of blue funk and general wind-up prior to the meeting with the ogres; and (b) the aftermath of complete amnesia and compelling thirst that follows it . . ." the ogres, of course, being his medical advisers. He says quite sensibly, if not very originally, that it is the doctor's duty to correct mental perturbation in the patient and to remove silly fears; but is there any reason to suppose that this duty is not being constantly and fairly adequately performed? It must be remembered that the tempo of the consultation has to be set with some regard for the patient's state of mind, and the doctor must be tolerably sure that the disorder is a trivial one before he dare be light-hearted about it. Moreover, on the patient's side, the sense of humour tends to be in abeyance when pain is present, and he may find it anything but easy to obey the injunction to "smile, damn you, smile." With the author's belief in the therapeutic value of laughter and distraction there can be no disagreement, and it may be true that "an hour at the pictures may do us far more good than a week of intensive psychotherapy," though

¹ "Birth Control and its Opponents." By Frank W. White. L.R.C.P. & S.E. London: John Bale, Sons and Danielsson Ltd. 1935. Pp. 164. 3s. 6d.

² "The Principles of Contraception. A Handbook for General Practitioners." By Joan Malleon, M.B., B.S. London: Victor Gollancz Ltd. 1935. Pp. 157. 4s. 6d.

¹ Laugh and Grow Fit. By the Laughing Leech. Author of "Say 991" London: Frederick Muller Ltd. 1935. Pp. 133. 3s. 6d.

country practitioners of experience will not so easily be convinced that "the sting of a bee may cure the rheumatic joint." The rest of the book deals with the ordinary rules of healthy living, and contains nothing very new or striking though it is entertaining to read. The author seems to have an undue faith in the value of antiseptics, but his advice on how to examine a house, with a view to discovering whether or not it is a healthy habitation, is good and practical. There are some pleasant pen-and-ink sketches, illustrating points in the text, by Mr. Alfred E. Taylor.

INTELLIGENCE AND PSYCHOLOGICAL TESTS

Few will deny that tests of intelligence, of performance, of specific aptitudes, and, to a lesser degree, of temperament, have already justified themselves in their application to educational work. For a time their use was restricted to the diagnosis of the subnormal, but to-day it is realised that a still more important problem for the educational and the vocational adviser is, in the words of a little book recently published,¹ the "discovery of unutilized aptitudes." The manual is designed to fill a recognised gap in the training of teachers which, while it includes usually some knowledge of general psychology, seldom provides guidance for practical application of psychological methods. It may be questioned, however, whether it is desirable, even if it were possible, to equip all teachers for psychological testing.

The personal equation of the examiner has been shown recently to play a large part in the marking of examination papers, an equation which may also vary with the mood of the moment, and, however foolproof psychological tests may be made, it seems essential that their application should be in the hands of persons with specialist knowledge and experience. It is difficult in any case to see how this book could be an adequate guide to teachers, for it is singularly incomplete. It gives minute instructions regarding certain essential preliminaries—winning the confidence of the child, tact, freedom from disturbance, good lighting, ensuring that the child is at ease physically and mentally, noting signs of fatigue—but there is no description of the tests, except for one or two examples; for the actual tests, recourse is necessary to other books in which similar preliminary instructions can be found. The manual assumes an ignorance on the part of its readers which, after 20 years or more of intelligence tests, seems difficult to credit; but if any teachers still exist who are unaware of the principles on which these tests are based, they will find here an introduction to this important subject.

ROSSIUM IN NARCOTIC ADDICTION

FURTHER information is forthcoming from America as to the therapeutic value claimed for Rossium (diphenylmethyl-pyrazolonyl) to which reference was made in THE LANCET of Sept. 14th (p. 624). Its use is based upon an anaphylactic theory of morphinism propounded by Dr. Ostromislensky and by its exhibition the distress which is apt to accompany the withdrawal of morphine is said to be alleviated. Moreover it is "now being used successfully in different types of alcoholism, such as acute and chronic alcoholism, delirium tremens, and alcoholic neuritis." The accompanying administration of sugar is said to aid its operation. Dr. Ostromislensky, who introduced rossium to the notice of the profession, regards this preparation as belonging to the group of so-called neurotropic substances and points to "astonishing results obtained in sciatica and in some cases of neuritis and herpes zoster." The drug is administered orally for six

consecutive days in doses of 2 capsules every four hours, and the use of the offending narcotic—morphine, heroin, or alcohol—can, it is maintained, be safely discontinued after one or two days' treatment. Messrs. Coates & Cooper Ltd. (94, Clerkenwell-road, London, E.C.1) can supply enough of the drug for use in a few selected cases.

THE BROAD STREET PUMP

Dr. H. B. Newham, Curator of the Museum, London School of Hygiene and Tropical Medicine, Keppel-street, W.C., writes: It will be recalled that in the cholera epidemic which was prevalent in London in 1854 the water from the pump in Broad-street, Golden-square, Soho, played a dramatic part in the dissemination of the disease. For museum purposes at this institution I am anxious to find a print or engraving showing this pump and its immediate surroundings, and I should be glad if any of your readers could give me information as to where such an illustration, if existent, could be found.

A PRESCRIBER'S LIST.—Messrs. Roberts and Co. (76, New Bond-street, London, W. 1) have brought out a fifth edition of this useful handbook to proprietary drugs of home and continental manufacture. In eight columns are given the name of the preparation, its maker, composition, form, size, price, indications, and dose. The list is more comprehensive than the previous editions, acknowledgment being made to 47 manufacturers and agents for their assistance in its compilation. A copy will be sent on request free of charge to any member of the medical profession.

Appointments

EDWARDS, COLIN, M.B. Sydney, D.P.M., has been appointed Registrar to the Out-patient Department of the West End Hospital for Nervous Diseases, London.
GHEE, P. H. R., M.B. Camb., F.R.C.S. Eng., Resident Surgical Officer to the Prince of Wales's Hospital, Plymouth.
McLAUGHLIN, F. L., M.D. Irel., D.P.M., Hon. Clinical Psychologist to the Out-patient Department of the West End Hospital for Nervous Diseases, London.
MORRIS, Miss E., M.B. Lond., Resident Anaesthetic Registrar at the Hospital for Sick Children, Great Ormond-street, W.C.
RIDLEY, H., M.B. Camb., F.R.C.S. Eng., Hon. Consulting Ophthalmic Surgeon to the Royal Buckinghamshire Hospital, Aylesbury.
London County Council Hospital Staff.—The following appointments, promotions, and transfers are announced: A.M.O. (I.) and (II.) = Assistant Medical Officer, Grades I. and II. (T.) = temporary:—
HOWARD, R. N., M.D. Melb., F.R.C.S. Eng., M.C.O.G., A.M.O. (I.), St. James;
MORTON, T., M.D., M.R.C.P., A.M.O. (I.), Lewisham;
LIPSCOMB, J. F., M.B. Sydney, A.M.O. (I.), Downs Hospital for Children;
BENHAM, L. R., M.B. Melb., A.M.O. (I.), White Oak;
LLOYD, E. T., M.R.C.S. Eng., D.P.H., A.M.O. (I.), South Western;
LILLIS, W. J., L.R.C.P. Lond., A.M.O. (I.), Brook;
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¹ The Teacher's Guide to Intelligence and Other Psychological Testing. By E. P. Allen Hunt, National Institute of Industrial Psychology; and Percival Smith, Vocational Guidance Officer, City of Birmingham Education Committee. London: Evans Bros., Ltd. 1935. Pp. 94. 1s. 6d.

ADDRESSES AND ORIGINAL ARTICLES

UNDULANT FEVER

WITH SPECIAL REFERENCE TO ITS CLINICAL ASPECTS
IN ENGLAND AND WALES *BY SIR WELDON DALRYMPLE-CHAMPNEYS, Bt.,
M.D. Oxon., F.R.C.P. Lond.

A MEDICAL OFFICER OF THE MINISTRY OF HEALTH

THOUGH it is my intention to concentrate chiefly upon the clinical aspects of undulant fever, I should like first to say a few words about its origin and the way in which it is transmitted.

HISTORY AND EPIDEMIOLOGY

Everyone has heard of the ravages caused by "Malta fever" in the Mediterranean last century (and probably long before); how Marston rescued it from the rubbish-heap of the continued fevers and Hughes described it in his classical monograph; how Bruce discovered the causative organism which he called the *Micrococcus melitensis*; and how through the brilliant work of the Royal Society's Commission—and especially that of Zammit (whom we mourn to-day), Horrocks, and Shaw—the source of infection in the Mediterranean was shown to be the milk of infected goats. These discoveries were followed with admirable and, one must confess, exceptional promptitude by the famous order forbidding the consumption of unboiled goat's milk by the forces of the Crown in the Mediterranean, one of the most successful and dramatic practical applications of scientific knowledge in the history of preventive medicine. There, however, the matter rested for some years, and if it had not been for the acute observation of Miss Alice Evans in the United States undulant fever would have been of little interest to medical men practising in this country. To Miss Evans is due the credit of recognising the very close relationship between Bruce's *Micrococcus melitensis* (now known as the *Brucella melitensis*) and Bang's *Bacillus abortus* (now known as the *Brucella abortus*) which he had shown to be the cause of contagious abortion in cattle. Her discovery was followed quickly by the recognition, in America, Rhodesia, and subsequently in every continent and in nearly every country of the world, of numerous cases of a hitherto unrecognised but certainly not new disease which was indistinguishable from the "Malta fever" of the Mediterranean but was shown to be conveyed not by goat's milk but by the milk, carcasses, and excreta of bovines, and less frequently of swine.

With regard to the origin of the cases recognised with increasing frequency in this country I will only remark that all the evidence I have collected during the last seven years points to the consumption of cow's milk as the commonest mode of infection, though I will freely admit that in a number of cases the aetiology remains at present extremely obscure. Contagious abortion of cattle is very widespread in this country (probably well over half our herds are infected, pedigree and tuberculin-tested herds being as often infected as others); and where efficiently pasteurised milk is consumed, as in London, undulant fever is almost unknown. The moral is obvious.

After these preliminary remarks I will pass to the clinical aspects of this disease.

AGE- AND SEX-INCIDENCE

Of the 253 patients in my series whose sex was known 170 were males and only 83 females (Fig. 1). This great preponderance of males over females has

been observed in nearly every country in which the disease has been studied, but its explanation is obscure, as is also that of the low incidence of the disease in childhood. Of 250 patients of known age in my series only 9 were under ten years of age and only 3 under five years. The age-group 10-20 contained 28 cases and the group 20-30 contained 29 cases, but 107 patients (i.e., 43 per cent.) were between thirty and forty.

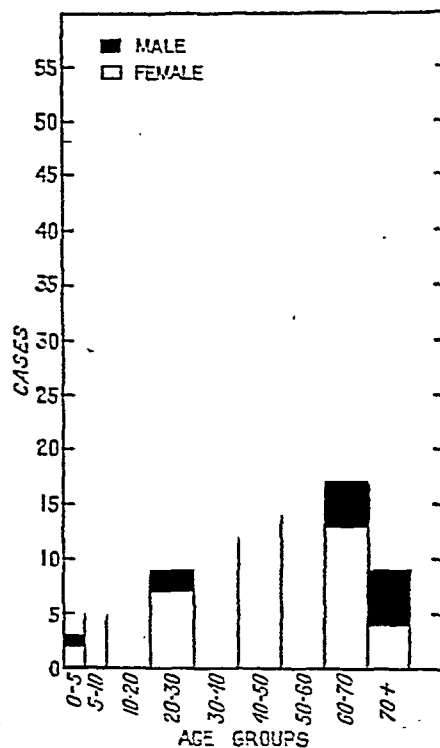


FIG. 1.—Sex and age of 250 patients.

CLINICAL COURSE

The onset of definite fever is usually preceded by a period of tiredness, malaise, headache, and sometimes sweats and cold feelings, varying in duration from a day or two to several weeks or even months. It is uncertain whether this period should be regarded as the prodromal stage of the disease or as a period of ill-health due to some other cause which opens the door to infection by the *Br. abortus*. In any case it is followed by the onset, often sudden, of definite symptoms, and the temperature, which one may suspect of having been abnormally high during the preceding period, is now found to be definitely supranormal. A remarkable feature of this disease is the conspicuous disproportion in many cases between the height of the temperature and the degree of prostration of the patients, who are often found to be pursuing their usual avocations (sometimes hard manual labour) with temperatures of 103°-105° F., and after many weeks of high fever, such as would produce profound prostration in such a disease as enteric fever, are comparatively fit and may make a rapid recovery.

The symptomatology of the disease is extremely variable, making diagnosis on purely clinical grounds often very difficult; but the commonest symptoms

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accompanying the onset of definite fever in my series were, in order of frequency, sweating (which is often profuse and sometimes sour-smelling), malaise and fatigue, headache, anorexia, pain in the back or limbs, and constipation. Other common signs and symptoms are rigors, enlargement of the spleen, cough, sore-throat, abdominal tenderness and/or pain, depression, diarrhoea, insomnia, rashes of various kinds, arthralgia and arthritis, epistaxis, nausea, and vomiting. The relative frequency of the commonest signs and symptoms is shown in Fig. 2. The temperature charts show great variations, but they usually display the daily swing which one associates with septicemias, and in most cases at some stage in the course of the disease may be seen the characteristic waves which suggested to Hughes the name by which the disease is now commonly known. These waves, as will be seen from Fig. 3, are formed by the summits of the small diurnal waves which are usually reached in the late afternoon or during the night. On analysing 66 temperature charts of cases in my series I find definite undulations in 37 cases, though this type of temperature curve is hardly ever present throughout the course of the disease.

Four cases showed a definitely remittent type of temperature over an appreciable period, but, as will be seen from Fig. 4, the remittent chart is usually merely an undulant chart in which the daily minimum is subnormal.

Occasionally the temperature is irregular throughout the course of the disease, as in the chart reproduced in Fig. 5; that is to say, no definite undulations occur and the evening rise and morning fall are irregular in their appearance, the rhythm being sometimes reversed for a day or two but seldom for longer. The temperature chart in 13 cases in my series was irregular throughout. The pulse is generally slow in proportion to the temperature. Afebrile periods, which commonly extend over a few days but are occasionally much longer, often interrupt the course of the fever and raise hopes in the patient and his medical adviser which are doomed to disappointment. The disease may terminate by crisis or lysis. The rapid return of the temperature to normal followed by recovery will often tempt the doctor to ascribe this happy result to the particular treatment which immediately preceded this occurrence; but all experienced observers are agreed that

such a sudden termination is common in untreated cases and should therefore be interpreted with great caution. The average duration of the fever in my series was about 11.5 weeks, but varied from a minimum of 1 to a maximum of 104 weeks (excluding one exceptional case of many years' duration). There does not appear to be any close correlation

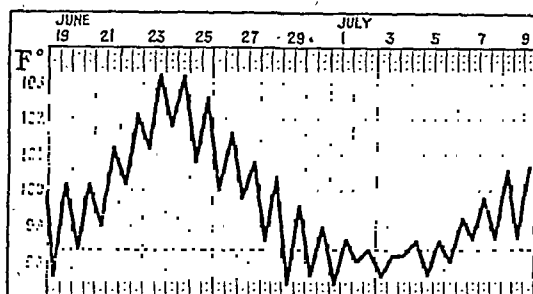


FIG. 3.—Temperature chart showing characteristic "undulant" fever.

between the severity of the disease in any particular case and its duration. Cases in which afebrile and sometimes symptom-free intervals of several months or years were followed by recurrence of the typical disease without any evidence of reinfection present a difficult problem, but various considerations suggest that the *Br. abortus* may lie dormant (e.g., in the spleen or lymph glands) for long periods.

COMPLICATIONS AND SEQUELÆ

A considerable variety of complications occurred in my series including arthritis (occasionally with temporary effusion into the joints), bronchitis and broncho-pneumonia, ulceration of the mouth or throat, orchitis, swelling of the legs, cystitis, myocarditis, pericarditis, phlebitis, thrombosis, uræmia, deafness, visual disturbances, meningismus, amnesia, and suicidal tendencies. True sequelæ were not common, persistent weakness and neuralgia being those most commonly met with.

DIAGNOSIS

Clinical.—The diagnosis on clinical grounds of a disease with such a varied symptomatology as undulant fever naturally presents considerable

difficulty, but a provisional diagnosis is often possible if the commonest symptoms which I have just described are borne in mind, and on many occasions the reputation of the practitioner has been greatly enhanced and the patient saved much unpleasant and ineffective treatment by the doctor's knowledge of this disease. In spite of the apparently low incidence of the disease (which I believe to be more apparent than real) it is wrong to regard a diagnosis of undulant fever as a last desperate resort when every other cause of fever has been excluded.

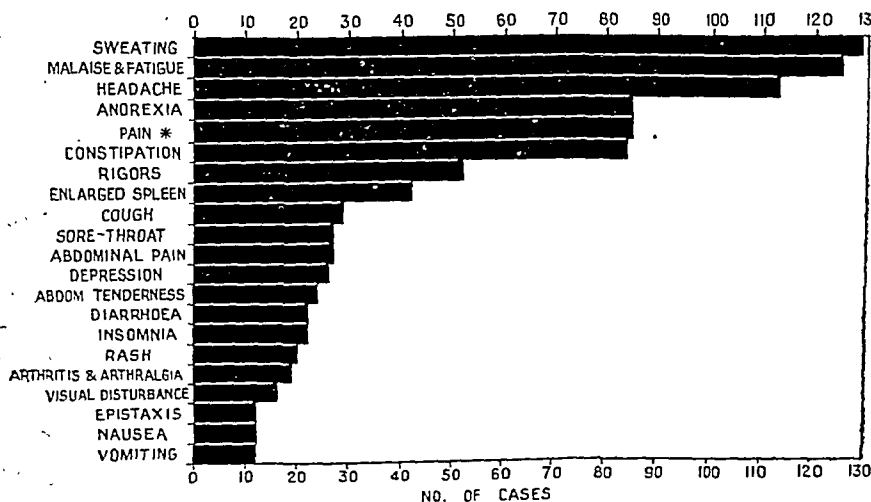


FIG. 2.—Commonest signs and symptoms in 300 cases of undulant fever.

Seeing that the agglutination test, properly carried out, will give a definite answer in nearly all cases after the fifth day of fever, blood specimens should be sent for this test at once in all cases in which the clinical picture creates a suspicion of undulant fever; and when blood is sent for the Widal test for organisms of the enteric group

agglutinin titre has persisted for several years after an attack of undulant fever (e.g., a titre of 1 in 640 after 4½ years), but the fall in titre is usually fairly rapid and cases (of which there are several in my series) in which typical relapses have occurred after months of complete freedom from symptoms suggest that the persistence of agglutinins in a high concentration may perhaps indicate a lurking infection.

Finally, it should be noted that occasionally cases are encountered in which the agglutination test proves negative though the clinical picture and history strongly suggest the diagnosis of undulant fever, and at least one instance is on record in which a *Br. abortus* grown from the patient's blood was not agglutinated by the patient's own blood-serum. In such cases two confirmatory diagnostic tests are still available—viz., culture of the organism from the blood, faeces, urine, &c., and the intradermal test.

The intradermal test, which closely resembles the Schick test for diphtheria immunity, is carried out with a killed suspension of *Br. abortus*, a fat-free antigen, or a filtrate of a broth culture of the organism, the filtrate being known as "abortin" or "brucellin." About 0.1 to 0.2 c.cm. of one of these preparations is injected into the skin on the flexor aspect of the forearm and an equal quantity of a control (e.g., sterile broth) nearby. The usual area of redness and swelling is produced within 24 hours by the specific antigen in a patient sensitised by infection with a brucella. This test does not appear to possess a

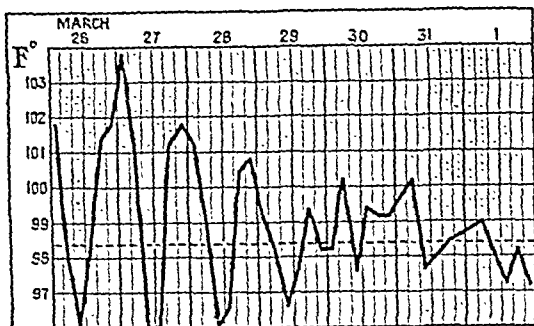


FIG. 4.—"Remittent" type of fever. Daily minimum subnormal.

the pathologist should always be asked to put it up against a brucella suspension as well. Many obscure cases are being elucidated by this means, and many more, I feel sure, are passing unrecognised from neglect of this maxim.

A positive agglutination test is, as I have already remarked, given in nearly all cases of undulant fever after the fifth day. Great difference of opinion has existed as to the titre which should be regarded as diagnostic, but it seems probable from the work of Wilson and Miles that non-specific agglutinations have been due in most cases to the use of unsatisfactory brucella suspensions (i.e., those made from rough or partly rough strains) and that with satisfactory methods even very low titres may be regarded as diagnostic of present or past infection. Fortunately, however, the titre in most cases is so high as to place the matter beyond doubt, the average titre for 255 cases in my series being just under 1 in 1500; in only one case (with a very characteristic clinical picture) was it less than 1 in 100. At the same time it is important to recognise the limitations of the agglutination test in the diagnosis of this disease. Pro-zones and para-zones (see Table) are of common

—	1 in 25	1 in 50	1 in 125	1 in 250	1 in 3000
Pro-zone ..	—	—	Trace	+	+

—	1 in 25	1 in 50	1 in 125	1 in 500	Up to 1 in 2500	1 in 500
Para-zone ..	+	+	—	—	+	—

occurrence (they were recorded in 10.7 per cent. of my cases) so that if the test is not taken over a large range of dilutions agglutination may be missed. Further, though agglutinins usually appear early their appearance is occasionally delayed, so that a single negative test is not really sufficient to exclude undulant fever and the test should be repeated if possible. Such repetition is also useful in cases in which a low titre raises a doubt as to whether a present or past infection is indicated, as a rising titre indicates an active infection, and in the later stages can be regarded as a good prognostic sign. Many cases are on record in which a comparatively high

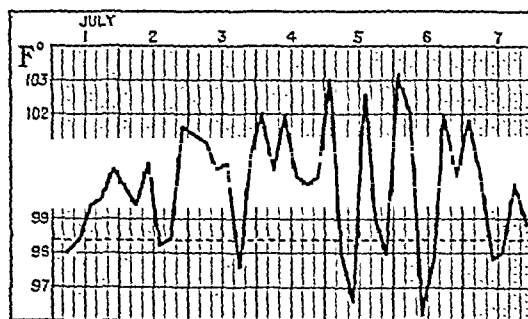


FIG. 5.—Irregular fever.

diagnostic value equal to that of the agglutination test, but it gives positive results in some cases in which the latter test is negative or so weak as to be doubtful. The intradermal test was carried out in only 6 cases in my series, and the intensity of the reaction was sometimes in marked contrast to the height of the agglutinin titre, one case with an agglutinin titre of 1 in 125 giving a strongly positive intradermal test, whilst another case with a titre of 1 in 1280 was only weakly positive. The intradermal test can therefore be regarded as a useful adjunct to diagnosis.

Blood culture is often successful in this disease, and if positive it not only clinches the diagnosis but provides the material for an autogenous vaccine should this be required. The blood should be taken at the time of day when the fever is highest and should be kept at body temperature until the culture medium is inoculated. After defibrination 5 c.cm. quantities of the serum should be sown in at least two flasks containing 100 c.cm. or more of liver infusion broth, both of these flasks being then incubated at 37°C., one of them aerobically and the other in an atmosphere containing 10 per cent. carbon dioxide. The cultures so made should be plated out on liver infusion agar every five days, incubating in two ways as before.

As the brucella group grow very slowly the flasks should be kept for at least five weeks or until positive subcultures have been obtained. In my series blood culture was successful in 10 out of 77 cases (13 per cent.) in which it was tried.

The organism may also be grown from the urine, as in 4 out of 47 cases in my series, but culture from the faeces was unsuccessful in 21 cases and the same was true for a throat-swab and two specimens of cerebro-spinal fluid. *Br. abortus* was grown from the spleen of one case post mortem and culture from the liver and mesenteric glands should also be attempted in a fatal case.

Though the blood count in undulant fever is not sufficiently characteristic to justify a diagnosis on this ground alone, it may yet afford useful confirmatory evidence. The two commonest features in this disease are anaemia and an absolute or relative lymphocytosis. In one-third of my cases there were less than $4\frac{1}{2}$ million red cells per c.mm., and in 13 per cent. there were less than $3\frac{1}{2}$ millions. As regards the white cells in 66 per cent. of the cases in which a differential white count was carried out more than 40 per cent. of the cells were lymphocytes and in 45 per cent. they constituted more than 50 per cent. of those counted.

DIFFERENTIAL DIAGNOSIS

In my series of cases 35 diagnoses other than that of undulant fever were made but some of these were far commoner than others. An alternative diagnosis was made in 91 cases, enteric fever being diagnosed in 41, influenza in 24, paratyphoid in 12, pulmonary tuberculosis in 6, malaria in 4, and cholecystitis in 3. Seven other diagnoses were made in 2 cases each, and the remaining diagnoses in 1 case each. Multiple diagnoses were made in 18 cases, and in one case 7 different diagnoses (viz., influenza, paratyphoid fever, tuberculosis, intestinal toxæmia, thyrotoxiæmia, glandular fever, and subacute bacterial endocarditis) were made before undulant fever was suspected. In the latter case the physician was misled by a positive agglutinin titre of 1 in 150 for *Bacillus paratyphosus* B in a test carried out early in the disease, but if it had been the practice at the laboratory concerned to put up all "Widal bloods" against *Br. abortus* as a routine the correct diagnosis might have been made four months earlier.

A full discussion of the differential diagnosis in undulant fever would be inappropriate here, but I may mention that the disease may be differentiated from typhoid fever (apart from laboratory tests) by the sweating which is commoner and usually much more profuse in undulant fever, the prostration which in typhoid fever is roughly proportionate to the severity and duration of the disease but in undulant fever is much less than would be expected, and by the far greater frequency of diarrhoea in enteric fever than in undulant fever (34.4 per cent. of the typhoid patients in Osler's series had diarrhoea and only 11 per cent. of the undulant fever patients in my series). The temperature chart will also help in this differentiation, especially if this shows distinct undulations and the fever lasts more than forty days.

PROGNOSIS

The mortality in this disease is very low, death having occurred only 9 times in 290 cases of my series (3.1 per cent.). I have already mentioned the long duration of the disease in many cases as well as the infrequency of sequelæ. The most favourable

indications of approaching recovery are the disappearance of hitherto persistent symptoms (e.g., sweating, headache, anorexia), clearing of the tongue, rise in the agglutinin titre and an apyrexial period of more than five days or, in a long case with intermittances, of greater duration than has previously occurred. High fever, unless very prolonged, is not necessarily a very serious sign even when accompanied by rigors, but general toxæmia and persistent or severe hæmorrhages (especially from the bowel) are of grave import. Complicating conditions such as renal or cardiac disease or broncho-pneumonia naturally reduce very seriously the patient's chances of recovery, and the prognosis is worse with increasing age, though a patient aged 80 in my series, who was unconscious and incontinent for two weeks, made a rapid and complete recovery after 23 weeks of fever.

TREATMENT

General.—In a disease such as undulant fever in which the fever is usually prolonged, and in which weakness, anorexia, and depression are often severe, it is important to maintain the patient's strength and to tempt his appetite. For this reason he should be encouraged to eat whatever he fancies and can digest, and "slops" should be restricted to those periods when the fever is very high or the digestion disturbed. For the same reason alcohol should not be excluded merely because the temperature is above normal. Constipation, a common symptom, should receive careful attention, as flatulence, anorexia, and headache can often be reduced or eliminated by keeping the bowels open. The bed-clothes and bedclothes should be changed whenever wetted by the sweats, which are often frequent and very profuse. Owing to the frequency of heavy furring of the tongue and a nasty taste in the mouth attention to oral hygiene will often make a big difference to the patient's comfort and appetite. The alternation of waves of fever with apyrexial periods makes the question of when the patient should be allowed out of bed a difficult one. In my experience there has been no obvious correlation between getting up and the occurrence of relapses, though the latter may be more severe if the patient gets chilled or over-tired by this means. The possibility of broncho-pneumonia and the aggravation of any cardiac condition present should also be borne in mind. A good general rule, which has proved useful in my experience, is to allow at least five days of apyrexia before getting the patient out of bed, and to be cautious with regard to exertion and going out of doors for another week.

Drugs.—Antipyretics should be used very sparingly as they have no permanent effect upon the temperature and increase the sweating, weakness, and depression. Aspirin or amidopyrin (if the patient has no idiosyncrasy to this drug creating a danger of agranulocytosis) may be used in small doses for headache or other pain or for insomnia. Salol and carminatives are useful for the relief of flatulence, and the former may have some lethal action on the causative organism.

Vaccines, both autogenous and stock, have been employed largely in this disease but appear to be very uncertain in their effect. Thus out of 21 cases in my series treated with stock brucella vaccines only 4 were definitely benefited, whilst only one of 6 cases given autogenous vaccines showed improvement. Curiously enough non-specific vaccine therapy (i.e., protein shock) was more successful than specific vaccine therapy in my series, 9 out of 13 cases given

injections of typhoid-paratyphoid vaccine (dosage 25 to 75 millions at intervals of 3 to 6 or more days) being definitely benefited thereby. Vaccine therapy is, however, definitely contra-indicated in old age or infancy and in debilitated patients or those with cardiac or renal complications.

Edwenil (1 to 4 c.cm. subcutaneously every 4 hours) is a harmless remedy which produced definite improvement in 3 cases of my series, and it seems probable that other patients might also have benefited if the dosage had been pushed. S.U.P. 36 seems also to have helped in a few cases (4 out of 12).

Many other remedies such as Mercurochrome, Argochrome, Trypaflavine, Bayer 205, Solganal, neoarsphenamine, Stabilaran, nuclei acid, colloidal solutions of silver, manganese, and sulphur, and injections of whole blood and of milk have been used, but the results appear to have been disappointing, and the intravenous antiseptics are by no means free from risk.

Finally, reference should be made to brucellin or abortin, the substance employed for the intradermal diagnostic test. This usually consists of the filtrate of a three weeks' broth culture of the causative organism. Considerable success has been claimed abroad for treatment with this substance, usually by intramuscular injection after a preliminary skin dose, but I have no details of the results of such treatment in this country though I have done my best, with the coöperation of Prof. G. S. Wilson, to encourage its trial.

INTRANATAL AND NEONATAL DEATH

A REVIEW OF NINETY-NINE CONSECUTIVE CASES

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This paper is based on the clinical and post-mortem records of a series of infants whose deaths had been reported to H.M. coroner for the city of Birmingham. All of them had died suddenly or unexpectedly within the intranatal or neonatal periods. The causes of death as ascertained by autopsy were as follows:—

	Cases.
Stillborn	21
Asphyxia neonatorum	31
Intracranial hemorrhage	17
Broncho-pneumonia	11
Congenital defects—	
Congenital heart disease	3
Cleft palate	1
Scurvy	1
Sepsis	1
Intraperitoneal hemorrhage	1
Shock and asphyxia	1
Suffocation	3
	99

STILLBIRTHS

Stillbirths are reported to the coroner when no doctor or midwife is present at the birth, or when there is any suspicion of foul play. In several of my cases birth was premature, but all the infants were viable as judged by their length, weight, and general development. Many had tears of the dural septa but these were all incomplete and the hemorrhages that had resulted were insignificant and insufficient to have caused fatal issue.

Failure of survival, therefore, must be considered as due to the non-establishment of normal respiration.

One cannot go so far as to say that all would have lived if modern methods of treatment had been available immediately, but there is no doubt that in a very large proportion death could have been avoided. In none was any condition found that was incompatible with life. In other words, the problem is similar in all respects to that encountered in dealing with neonatal asphyxia to which I refer next.

ASPHYXIA NEONATORUM

This group contains 37 of my cases. Of these, 23 died within twenty-four hours of birth and 14 lived for more than a day. Of the latter 10 died within forty-eight hours of birth but 3 lived for more than two days, and 1 for four days. In a considerable number a midwife was in attendance at the time of the birth, no difficulty was experienced in getting respiration established, and the infants were stated to have cried well. On the other hand, a certain number of the mothers had concealed their pregnancy and were alone when the baby was born; and when help arrived the infant was dead.

There is nothing of importance in the obstetric histories of any of those cases in which reliable information could be obtained; all except one were vertex deliveries and in none was instrumental aid necessary.

In all the infants the lungs were very imperfectly expanded; in fact in none did they fill more than half their respective pleural sacs. The other pathological changes encountered were those commonly found in death from asphyxia from any cause and do not require reiteration here, with the exception of the increased intracranial pressure to which reference will be made presently.

Before the problem of asphyxia neonatorum can be solved the mechanism whereby normal respiration is established in the newly born baby has to be elucidated. A vast literature is growing up round this subject which it is impossible for me to summarise fairly here, for much is controversial and much speculative. The observations that have recently been published by Barcroft¹ are, however, illuminating. He discusses three possible causes for the first breath, viz.: (1) oxygen-want, (2) excess of carbon dioxide, and (3) increased blood pressure in the brain. His original investigations have enabled him to produce positive evidence that lack of oxygen may lead to respiration, whereas no such evidence was forthcoming concerning the two other suggested causes. At the same time, Barcroft qualifies this opinion by stating that whilst oxygen-want is the essential cause of the first breath the amount of carbonic acid in the blood cannot be ignored. Confirmation of this work will be awaited with interest, as it may go a long way towards the solution of asphyxia in the new-born infant.

Asphyxia neonatorum is commonly divided into two groups—asphyxia livida and asphyxia pallida. The former is regarded as a condition akin to suffocation and the latter to surgical shock. Moncrieff² does not subscribe to this classification but maintains that the colour of the baby is no clear guide to the degree of respiratory failure. He does agree that the pallid infants present a more serious problem, and as regards causation states that almost any of the aetiological factors may result in either cyanosed or pale babies. In the cases here considered all the infants died from blue asphyxia, and many were reported to the coroner because of suspicion that death was due to suffocation.

Cruikshank³ in his monograph on neonatal death draws attention to the fact that oedema of

the brain and meninges is present in almost all cases of asphyxia neonatorum, and my experience fully confirms this. What part the increased intracranial pressure thus produced plays in the production or aggravation of the asphyxia is difficult to decide. It is obvious that the respiratory centres must be embarrassed by such pressure, but it is equally important to bear in mind that asphyxia will produce cerebral congestion and oedema. Which is cause and which effect is the problem. I have separated my cases of frank intracranial hæmorrhage from those of asphyxia neonatorum, and my opinion is that the cerebral oedema found in asphyxia is in the main the result of the asphyxia and not the cause. At the same time it cannot be controverted that the more severe the asphyxia the greater the cerebral oedema, and the greater the cerebral oedema the greater will be the embarrassment of the respiratory centres.

The correct methods of treatment of the asphyxiated newly born infant are now founded on sound knowledge, but the old-fashioned and useless methods die hard. These infants are suffering profoundly from shock; therefore great care in handling and the provision of warmth are of paramount importance. Next comes "the toilet of the air-way,"⁴ and thirdly inhalation therapy.^{2, 4, 5} It is not my intention to enter into the details of these methods of resuscitation but I will content myself with drawing attention to three important points in connexion with inhalation therapy. Firstly, carbon dioxide is the normal stimulant to the respiratory centres, but in excessive amount it is a respiratory depressant. Secondly, carbon dioxide can only be produced in the tissues from oxygen. And, thirdly, a cylinder of oxygen is of much greater value than a cylinder of carbon dioxide; the former can do nothing but good, whereas the inspiration of pure carbon dioxide, except for a very brief period, will prove fatal.

Lastly, the association between asphyxia and increased intracranial pressure, to which attention has already been directed, has to be considered. In this connexion treatment by means of hypertonic rectal saline as advocated by Moncrieff⁶ undoubtedly constitutes a real therapeutic advance. He advises the introduction of 2-3 oz. of 10 per cent. saline into the rectum of the new-born babe, as soon as any symptoms appear. This should be done slowly, with the baby in the cot and with the minimum of disturbance, and the buttocks should be held together to get as long a retention as possible.

NEONATAL INTRACRANIAL HÆMORRHAGE

I have included in this division only those of my cases with gross intracranial hæmorrhage. In all free blood or blood-clot was present over the surface of the cerebral hemispheres in part or in whole. In some, in addition, hæmorrhage had occurred beneath the tentorium cerebelli but none showed subtentorial hæmorrhage only. Demonstrable tearing of the tentorium was present in 12 instances—in 6 of which the tears were complete—and in a few the falx was also damaged. In one case the source of the hæmorrhage was a tear of the superior longitudinal sinus. Of the 12 in which the hæmorrhage was associated with partial or complete tentorial tears 10 had been born precipitately, 1 was an instrumental delivery due to protracted labour, and the twelfth was a normal labour.

Only 3 of these 17 infants survived for more than twenty-four hours, and most of them died very shortly after birth. One lived for forty-two hours,

this being an infant of 6½ lb. who was born with a normal labour, breathed well, and at autopsy had much free blood over the surface of both cerebral hemispheres.

It is now generally agreed that trauma plays the significant part in the production of neonatal intracranial hæmorrhage. This subject has been studied exhaustively by Holland,⁷ who has shown that when the fetal head undergoes changes in shape alterations in the tension of the dural septa are inevitable, owing to the nature of their attachments to the cranial bones. Most of Holland's cases were the result of breech presentation and forceps delivery through a contracted pelvis, but a few resulted from apparently normal labour and only one was precipitate labour. Capon⁸ gives as the determining causes of hæmorrhage excessive head-moulding, too rapid head-moulding, and fetal asphyxia. Of my 17 cases, the labour was precipitate in 9 and protracted with instrumental delivery in 2; one was a breech presentation, and in the remaining one the labour was stated to be normal or at all events more or less uneventful. These figures thus indicate that too rapid head-moulding is a potent factor in the production of neonatal and intracranial hæmorrhage. Hence the danger of precipitate birth.

Ford⁹ maintains that prematurity is an important contributing cause, and my figures support this contention in that over half were under 6 lb. in weight.

Little of importance emerges from a study of the clinical histories of these infants. As most died very shortly after birth, and as almost none were born or treated in any institution, or indeed had been examined by a medical man, no facts of significance can be elicited. In no case was the diagnosis suspected during life, and even if it had been it is difficult to believe that any form of therapy could have saved life, such was the extent of the hæmorrhage.

In my experience with coroners' post-mortems fatal neonatal intracranial hæmorrhage is more likely to follow precipitate labour and too rapid head-moulding than prolonged, difficult, and instrumental deliveries. The obstetricians have, in my opinion, been unjustly blamed in the past for many of these catastrophes.

BRONCHO-PNEUMONIA

If the lungs of all the infants in this series had been examined microscopically there is no doubt that consolidation would have been found in many, for atelectasis and neonatal broncho-pneumonia are closely allied pathological conditions. However, I am here concerned only with those in which the consolidation was so extensive as to be evident to the naked eye, and therefore the primary cause of death. There are 11 of these, of whom the youngest was nine hours, the eldest twenty-eight days, and the average eighteen days old. In 6 the history was to the effect that the infants had appeared to be thriving satisfactorily and had been free from cough or other symptoms of respiratory disorder. Their deaths were unexpected, and in several the information received pointed to death from suffocation.

CONGENITAL DEFECTS

A congenital defect was the cause of death in only 4 of my cases. In several others congenital abnormalities of one kind or another were an accidental post-mortem finding—e.g., solitary kidney—but in none had they contributed to the fatal issue.

All three dying from *congenital heart disease* had some degree of aortic stenosis. The baby with the cleft palate was 8½ lb. at birth: various methods of feeding were tried without success, and he really died from marasmus, for at the time of death the weight had dropped to 5½ lb.

SUPRARENAL HÆMORRHAGE

Suprarenal apoplexy is a fascinating and baffling condition, the ætiology of which appears to be wrapped in obscurity. Arnold¹⁰ states that the causal factors mentioned in the literature include asphyxia, trauma, eclampsia in the mother, purpura and fever in the mother, thrombosis of the suprarenal veins, syphilis, hæmophilia, and toxic factors such as burns and diphtheria. In both my cases the infant died shortly after birth, and in both massive hæmorrhage had occurred into one suprarenal gland. They were fully mature, and there is nothing in the histories of either mothers or babies to suggest possible causes.

INTESTINAL VOLVULUS

This was a mature infant that suddenly collapsed on the third day and died without warning. Post-mortem examination revealed a general peritonitis with faecal material in the peritoneal cavity. Intestinal obstruction had been caused by a volvulus of the cæcal variety and the cæcum itself had perforated.

SEPTICÆMIA

This infant had panophthalmitis. It had lived for thirteen days and had received only some sporadic treatment for ophthalmia during the first few days of life. Death was due to septicæmia.

DEATH DUE TO VIOLENCE

One infant died from *intraperitoneal hæmorrhage* due to a rupture of the liver.

This was the second child of a single woman who had concealed her pregnancy. The baby was born after she had been in labour for some hours and while she was standing upright over a blanket. At autopsy the body was that of a fully mature infant weighing 7 lb. 10 oz. with cord and placenta still attached. On opening the abdomen the peritoneal cavity was seen to be filled with blood due to a rupture of the liver just where the umbilical vein entered. The pull on the umbilical cord just as the baby hit the floor must have produced sufficient tension to cause this rupture of the liver but insufficient to damage the cord externally.

The death from *shock and asphyxia* took place in circumstances which are instructive and probably unique.

A healthy male infant, eighteen days old, was being washed by his mother on her knee and over a bowl of water on the floor when the woman fainted. When she came round she was lying on the floor and the baby's head was in the bowl of water and its feet sticking out. At the post-mortem examination the body was that of a well-nourished infant weighing 7 lb. 12 oz. There was no external bruising of the head or elsewhere. The child was not drowned, and my explanation of this catastrophe is that it was concussed by a blow on the head from hitting the bowl in its fall; and this, combined with the sudden immersion in the water, produced death from shock and asphyxia.

Only three of my cases died from *suffocation*. In view of the fact that in a considerable number of the total cases under review both the circumstances and the external examination of the bodies suggested that death might have been due to suffocation, the very small number in which this was actually proved

to have been the cause is arresting. In particular, the external appearances of a baby that has died from pneumonia and one that has been suffocated are usually identical, and in fact differential diagnosis, in spite of the fullest history of all the circumstances, can only be established by post-mortem examination. In Birmingham all these cases are subjected to a detailed autopsy, and my experience leads me to fear that where this practice is not carried out there is a very real danger that mothers may be admonished for causing the deaths of their babies when they are innocent. In consequence I feel that I cannot urge too strongly the universal adoption of the Birmingham policy. It is only by post-mortem examination that the cause of death can be irrefutably ascertained, and by such procedure the risk of stigmatising the parents when such would be unwarranted and unjust will be entirely avoided.

SUMMARY

The clinical and post-mortem findings in 99 cases of death in the intranatal and neonatal period that were reported to the Birmingham coroner have been here reviewed. Of these, 75 failed to survive because of factors directly attributable to birth (accidents associated with labour or inability to establish normal respiration); 15 died from disease not directly associated with birth factors; 4 died from congenital abnormalities; and 5 met their death from violence.

It is appreciated that these constitute a highly selected group and form but a very insignificant proportion of the total stillbirths and neonatal deaths in the city of Birmingham. Furthermore, this series is not complete in itself in that it does not include all the cases in this age-period that were reported to the coroner. Nevertheless, they do constitute a valuable collection for at least two reasons: the causes of death are based on personally performed post-mortem examination, and they occurred amongst a section of the population outside institutional guidance or control and with a minimum of medical supervision; in fact, in the very large majority no medical man had been in attendance. No useful purpose, therefore, could be served by attempting to compare my series with those recorded by other observers, most of which have been obtained from institutional practice. Whilst hospitals must of necessity deal very largely with the abnormal and difficult case, on the other hand modern methods of diagnosis and treatment of the newly born child are always available immediately. In view of these circumstances my cases can best be regarded as a complement to those recorded by others. It is hoped that they will help to shed light from this unaccustomed angle on the extremely important and complex subject of stillbirth and neonatal death.

I have to thank Dr. W. H. Davison, H.M. coroner for the city of Birmingham, for permission to make use of the clinical and post-mortem records of these cases.

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A STUDY OF HÆMOLYTIC STREPTOCOCCAL FIBRINOLYSIS

IN CHRONIC ARTHRITIS, RHEUMATIC FEVER, AND SCARLET FEVER

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IN contrast to the negative results of cultural methods in the study of the ætiology of chronic arthritis and rheumatic fever, indirect immunological methods of investigation have suggested that the hæmolytic streptococcus plays a part in the causation of these diseases. Thus Todd (1932), Myers and Keefer (1934), Griffiths (1934), and Coburn and Pauli (1935) have shown that in patients in whom hæmolytic streptococci can be isolated from the foci of infection, antibody which neutralises streptococcal hæmolysin can be detected in the blood while similar high titres of antihæmolysin are encountered in cases of rheumatoid arthritis and rheumatic fever. The phenomenon of hæmolytic streptococcal fibrinolysis described by Tillett and Garner (1934) was shown by them to yield evidence of an immunity response, in that during convalescence from hæmolytic streptococcal infection the fibrin became resistant to solution by cultures of hæmolytic streptococci. Hadfield, Magee, and Perry (1934) showed that similar resistance to fibrinolysis was found in the blood from cases of rheumatic fever, and Myers and Keefer (1935) confirmed this, and further showed that such fibrin resistance was not found in rheumatoid arthritis.

In a previous paper a technique for the measurement of hæmolytic streptococcal fibrinolysis was described (Stuart-Harris, 1935). Three times the standard deviation plus the mean of the results obtained in 72 normal individuals was chosen as the limit for the normal time taken for fibrinolysis (51 minutes). Using this figure to assess the results in diseased individuals, susceptibility to fibrinolysis was defined as lysis within the time limit of normality, and resistance to fibrinolysis as lysis in a time greater than the normal limit. Resistance to fibrinolysis was further subdivided so that incomplete or total lack of solution of fibrin clots after 24 hours of incubation was delimited as maximal or "complete" resistance, in contrast with complete solution in a time not exceeding 24 hours which was termed partial resistance. It was shown that of 72 normal persons only 1 was partially resistant and none "completely" resistant to fibrinolysis. Of 38 cases of proven hæmolytic streptococcal infection 12 showed partial and 5 "complete" resistance; while of 60 cases of non-streptococcal infections 6 showed partial and 1 "complete" resistance. From this it was concluded that the presence of resistance to fibrinolysis was related to hæmolytic streptococcal infection, particularly if the resistance was of maximal degree. It was further shown that in streptococcal tonsillitis and pharyngitis, resistance to fibrinolysis, if it occurred, was found in the second or third week after the onset of the infection. This work has now been extended to include cases of chronic arthritis, rheumatic fever, and scarlet fever, the results of which are here reported. Table I. gives the summary of the results. Fig. 1 shows the

actual fibrinolysis times recorded for each case (maximal figure recorded for each case except for rheumatic fever), and Fig. 2 expresses the percentages in each group showing partial and "complete" resistance.

TABLE I.—*Distribution of Resistance to Fibrinolysis in the Various Patients*

Group.	Total No.	Sus-ceptible.	Partial resist-ance.	"Com-plete" resist-ance.
		No.	No.	No.
<i>Chronic arthritis</i>				
Rheumatoid	60	54	4	2
Osteo-arthritis	6	6	—	—
Fibrositis	2	2	—	—
Gonococcal	1	1	—	—
Gout	1	1	—	—
—	70	64 (91·4%)	4 (5·8%)	2 (2·8%)
<i>Rheumatic fever</i>				
Convalescent	22	15 (68·2%)	7 (31·8%)	—
Active—				
Chorea	5	4	1	—
Congestive failure ..	4	3	1	—
Carditis, arthritis, nodules	39	12	19	8
(Over 20 years only) ..	(10)	(4)	(3)	(3)
—	48	19 (40·0%)	21 (43·2%)	8 (16·8%)
<i>Scarlet fever</i>				
Uncomplicated	42	37	4	1
Septic complications ..	5	3 (85·2%)	1 (10·6%)	1 (4·2%)
Arthritis, carditis, and nephritis	11	3 (27·2%)	5 (45·4%)	3 (27·2%)
—	58	43 (74·1%)	10 (17·2%)	5 (8·7%)
<i>Hæmolytic streptococcal "tonsillitis"</i>				
Non-rheumatic	18	11 (61·1%)	5 (27·8%)	2 (11·1%)
Convalescent rheumatic ..	13	3 (15·4%)	5 (38·5%)	6 (46·1%)

CHRONIC ARTHRITIS

In the arthritic group 60 cases of rheumatoid arthritis in every stage of the disorder, 6 cases of osteo-arthritis, and 4 cases of fibrositis, gout, and gonococcal arthritis were examined. Some of the cases of rheumatoid arthritis were kindly selected by Dr. George Kersley of Bath, who also collected the blood. Partial resistance was found in 4 cases (5·8 per cent.) and "complete" resistance in 2 (2·8 per cent.). All the resistant cases were examples of rheumatoid arthritis, and the only feature common to the patients was that they had undergone recent rapid improvement. One or two similarly improved patients were, however, susceptible to fibrinolysis, and the results in this group were not considered abnormal.

RHEUMATIC FEVER

A total of 70 children and adults representing every stage of the disorder have been examined—many at frequent intervals over considerable periods of time.

Convalescent Rheumatism.—By the kind coöperation of Dr. N. Gray Hill, of Queen Mary's Hospital, Carshalton, a group of children who were patients at a convalescent home was examined. All had

definite histories of rheumatic manifestations or had definite signs of cardiac lesions. They all had normal sedimentation-rates, and as far as could be ascertained had had no recent activity of the rheumatic process. Amongst this group there were 7 (31.9 per cent.) with partial resistance and none with "complete" resistance. This affords a basis for comparison with active rheumatic cases.

Active (Acute and Subacute) Rheumatism.—There were 48 patients who were active and of these 29 (60.0 per cent.) had resistance, of which 8 (16.8 per cent.) had "complete" resistance. The degree of activity was assessed with the help of the sedimentation-rate and the fibrinolysis times corresponding to the greatest activity are the basis of these figures. The active cases may be divided as follows:—

(a) *Cases with Congestive Heart Failure.*—It was difficult to assess the degree of activity in these cases. There were 4 cases, of which only 1 showed resistance.

history of recent throat infection, about ten days to three weeks prior to the rheumatic manifestations. Such a history was sometimes obtained among the children but much less frequently. It was, therefore, difficult to explain the presence of resistance in patients without foci of infection or without histories of sore-throats unless this was related to the rheumatic phenomena.

The next point to be considered is the change in resistance to fibrinolysis during the course of the disease in the individual case. Most of the patients in the active group were examined subsequently when the process had become inactive or less active (5 patients died in all). The most common event was a restoration of the fibrinolytic time to normal or towards normal as the patient recovered from the active stage. However, there was a lagging behind of the fibrinolytic time as compared with clinical activity and sedimentation-rate. The result was

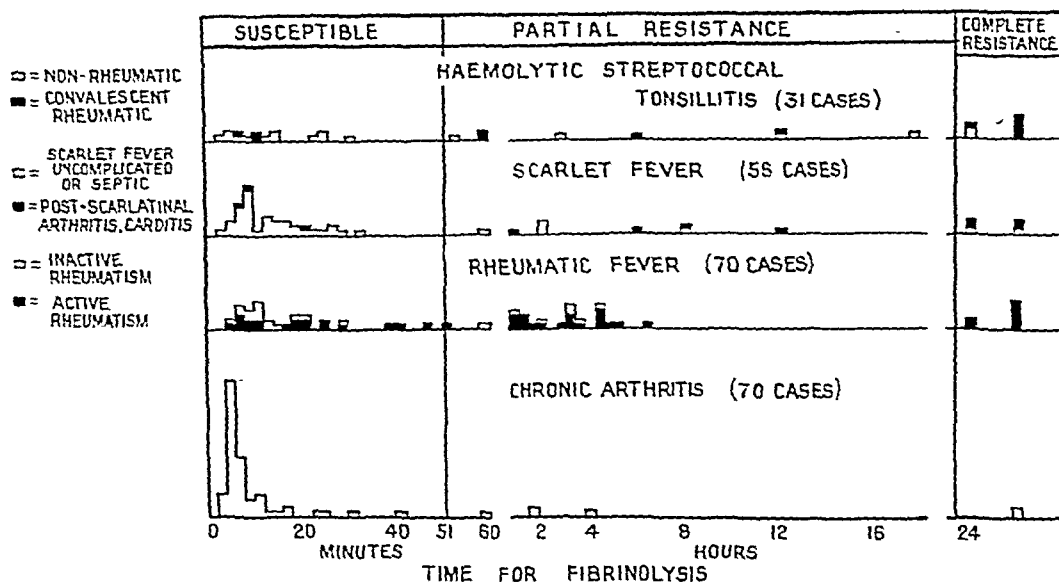


FIG. 1.—Distribution of fibrinolysis times in the various patients.

(b) *Cases with Chorea as the Dominant Symptom.*—Although some of the other patients had choreic movements, yet these were overshadowed by other more grave signs. The 5 patients with chorea only did not show definite cardiac or other signs. One only showed resistance, although one of the other patients when convalescent, developed resistance after an attack of acute tonsillitis.

(c) *Cases with Carditis, Arthritis, Nodules, &c.*—These were subdivided into two groups according to age, under and over twenty years of age. The group under twenty showed the highest percentage of resistance—69 per cent. No difference was observed between first attacks and relapses of acute rheumatism.

It seemed that children with acute arthritis with definite swelling of the joints showed high figures slightly more often than those with nodules or pure carditis. The adult group showed resistance less frequently than the children when the effect of a definite focus of infection was taken into consideration. Thus of 10 adults 6 were resistant but 2 of these had recently had nasal sinusitis and 1 had had acute mastoiditis. As these foci were probably due to hemolytic streptococci the presence of resistance in these patients might have been due to the infection rather than to the rheumatic manifestations. The remaining 3 with resistance gave a

that often by the time the patient had become inactive the fibrin was still resistant. This was confirmed among the cases at the convalescent home; the first reading after admission to the convalescent home might be partial resistance although the patient was clinically inactive, but eventually the resistance disappeared, although some few patients were still resistant even at the time of discharge. During the active stage, however, there was no correlation between the degree of activity and the degree of resistance in different cases. The fact that there was such difference between the various cases might be taken as an argument for minimising the significance of the reaction. However, when the protean nature of the manifestations of rheumatism are considered and the total lack of agreement between different cases when viewed over a period of time, it is scarcely to be wondered that blood changes also differ widely. Certain of the cases showed the first rise in resistance when the activity was subsiding. This was particularly well marked in two cases with carditis alone. Another point deserves mention. It has seemed that the rheumatic patients with very high figures such as "complete" resistance have on the whole done better when followed over a few months than those who have

not had this high degree of resistance. The type of case with "complete" resistance was often the patient with acute arthritis with or without carditis. Such patients often had a straight-line sedimentation-rate during their stay in hospital, the line being a falling one throughout, and it seemed as though by the time they were admitted the disease process had already been overcome and convalescence had set in. Like all generalisations this statement is probably only roughly true and at least one patient has been seen who was "completely" resistant and who nevertheless relapsed while in hospital with chorea and pericarditis. When this episode was over the resistance again returned to a high level and the immediate history was satisfactory.

Finally, the effect was studied of intercurrent streptococcal tonsillitis and pharyngitis in 13 children convalescent from various rheumatic manifestations.

One child only had been recently active and she was the only one to suffer relapse into active rheumatism (nodules) within three weeks of the throat infection. Eleven children showed resistance to fibrinolysis, 6 being "completely" resistant, and although only one of these children was examined prior to the infection so that proof that the resistance was related to the infection was not absolute, the figure of 85 per cent. with resistance must be compared with that of 32 per cent. for the remaining convalescent rheumatic patients. Two conclusions follow from these observations. (1) Mere throat infection, without subsequent rheumatic activity, will produce resistance to fibrinolysis, so that the whole of the findings in the active rheumatism group might be caused by throat infections preceding the rheumatic disease. (2) Comparing the rheumatic children with tonsillitis with the 18 cases of streptococcal tonsillitis in non-rheumatic children and adults examined in the early part of this work it is seen that 85 per cent. of the rheumatic patients and 39 per cent. of the non-rheumatic patients showed resistance (Fig. 2).

SCARLET FEVER

A detailed study has been made of 58 patients selected from a possible 301 patients admitted to Plaistow Fever Hospital suffering from scarlet fever during the period of observation. The patients were all under the care of Dr. Donald MacIntyre, and clinical notes were kindly made by Dr. S. L. Wright who collected all the specimens of blood. The group includes all patients with heart and joint and some with kidney lesions seen during the whole period, and this accounts for 11 of the series. The remaining patients comprise 42 without sequela and 5 with various septic lesions. The fibrinolysis time was estimated weekly in some cases and at random in others. Resistance to fibrinolysis was encountered in 15 patients (26 per cent.), but 8 of these belonged to the group with heart, joint, or renal lesions, and of this group 73 per cent. showed resistance to fibrinolysis at the height of the complication. It was only possible to determine the time of onset of

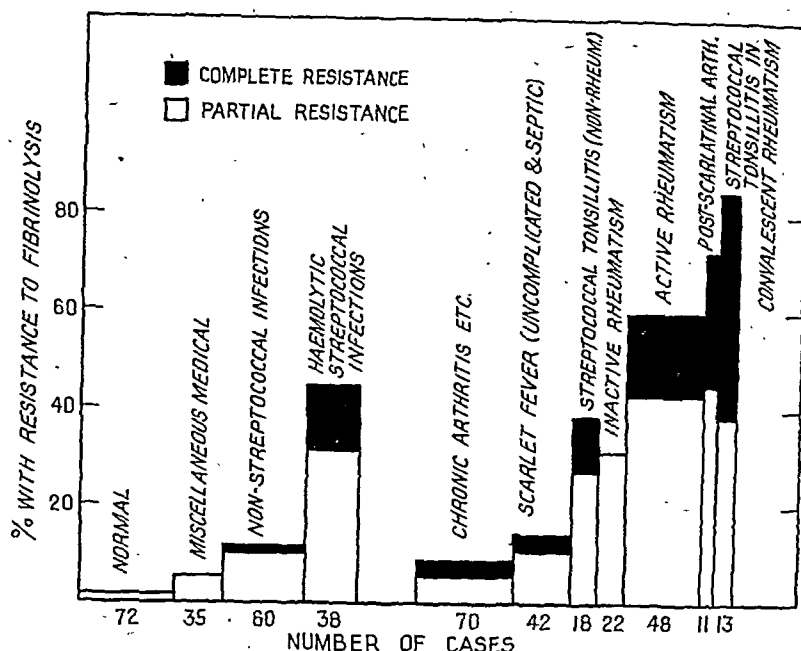


FIG. 2.—Percentage resistance to streptococcal fibrinolysis.

resistance to fibrinolysis in straightforward scarlet fever in a few cases but, as in streptococcal tonsillitis, the second or third weeks appeared to be the time of onset of the blood change.

For the following clinical notes I am indebted to Dr. MacIntyre and Dr. Wright. The 42 uncomplicated cases were all of typical mild scarlet fever and only 4 were of interest in that joint pains were complained of during the first week of the disease. No prolongation or secondary rise of temperature occurred and the pains were perhaps toxæmic in origin. The 5 patients who developed resistance to fibrinolysis differed in no way from the remainder, and did not complain of joint pains. The cases with septic sequelæ included 2 with otorrhœa, 2 with mastoiditis, and one with nasal discharge. The mastoid cases alone showed resistance to fibrinolysis which was present in one patient before the onset of the mastoiditis, disappearing as this developed, and in the other after suppuration had ceased.

Table II. shows the clinical details of the 11 patients with non-suppurative sequelæ. Two had albuminuria, one had fever and joint pains in the second week, and eight had varying combinations of arthritis, carditis, and nephritis. All but 1 of the 11 patients showed a quiescent period of about two weeks between the initial fever and the onset of the complication, some experienced a second sore-throat during the illness varying in time relation with the complication, and all experienced a constitutional reaction with fever at the onset of the complication. The case without quiescent period developed acute arthritis and carditis on the second day of typical scarlet fever, having received antiscarlatinal serum the day previously (W. S.). The other 8 patients with arthritis and carditis would have been described formerly as post-scarlatinal arthritis and carditis. Four, however, had either had rheumatic fever or presented cardiac lesions on admission, and the phenomena observed appeared to be relapse of previously acquired rheumatism. The 4 other patients without rheumatic histories or lesions developed closely similar phenomena (pericarditis and arthritis, endocarditis and arthritis, or endocarditis alone), and

there seems no justification for regarding them as other than newly acquired rheumatic disease.

Of the 11 patients, 8 showed resistance to fibrinolysis, 3 being "completely" resistant (27.2 per cent.). The 3 patients without resistance include W. S., examined once only on the second day of the disease, W. J., examined only after carditis had been in existence for three weeks, and K. M. in whom the presence of the suppurating lesion might have affected the blood change. Only one of the patients with resistance was examined before the onset of the complication (S. H.), and in her the onset of albuminuria was correlated with the development of resistance. In the remaining patients resistance was present at the onset of the complication and persisted in some cases for weeks.

DISCUSSION

It follows that hæmolytic streptococcal infection is closely related to the disease rheumatic fever and

blood of patients with rheumatic fever is resistant to fibrinolysis, particularly during the active stage of the disorder or after intercurrent streptococcal infection during convalescence from activity. (3) The blood of patients with scarlet fever is resistant to fibrinolysis within three weeks from the onset in a minority of individuals and resistant in a majority of those patients with heart or joint sequelæ. (4) Hæmolytic streptococcal infection is considered to be related to rheumatic fever but not to rheumatoid arthritis. (5) Hæmolytic streptococcal infection of the respiratory tract in a rheumatic subject probably differs from similar infection in a non-rheumatic subject.

This work was commenced under tenure of a Lawrence scholarship at St. Bartholomew's Hospital; the expenses of the major portion were defrayed by a grant from the Medical Research Council. I desire to thank the physicians and surgeons of St. Bartholomew's Hospital for permission to study cases under their care, Sir Frederick Menzies for

TABLE II.—Non-suppurative Sequelæ in Scarlet Fever

Patient.	Age.	Clinical features.	Day of onset.	Past history.	Heart on admission.	Streptococcal fibrinolysis time.
W. F.	10	Joint pains, subacute carditis.	27th	Rheumatic fever, aged 7.	Normal.	"Complete" resistance.
K. M.	24	Arthritis, pericarditis, hæmaturia, cervical abscess.	37th	"Leaky heart," aged 23.	Enlarged; mitral systolic murmur.	Normal (throughout).
W. J.	7	Fever, tachycardia.	22nd	Rheumatic fever, aged 6½.	Mitral regurgitation.	Prolonged.
R. R.	21	Fever, joint pains.	12th	Family history (brother and sister) rheumatic heart.	Normal.	"Complete" resistance.
C. L.	12	Carditis.	14th	Nil.	Mitral stenosis.	Prolonged.
W. S.	30	Arthritis, carditis.	2nd	"	Normal.	Normal (2nd day).
E. M.	25	Joint pains, carditis.	22nd	"	"	"Complete" resistance.
L. N.	25	Arthritis, pericarditis.	42nd	"	"	Prolonged.
W. J.	5½	Carditis.	20th	"	"	Normal (49th day).
M. M.	32	Joint pains (day 7), albuminuria.	14th	"	"	Prolonged.
S. H.	11	Albuminuria.	20th	"	"	"

not to rheumatoid arthritis if the evidence is accepted that the blood change under discussion is due to such infection. Even accepting this conclusion the site of the streptococcal infection in rheumatic fever cannot be decided, although other observers (e.g., Coburn, 1931) have brought forward evidence for the belief that the throat is the responsible focus in rheumatic fever. The results presented above suggest that such infection occurs in a high percentage of cases of rheumatic fever. Either rheumatic subjects repeatedly suffer from throat infections differing in frequency only from those of non-rheumatic subjects, or the response of the rheumatic subject to the streptococcal infection is different from the non-rheumatic response. The results obtained in cases of scarlet fever certainly lend support to the latter alternative, suggesting that resistance to fibrinolysis, though developed in a proportion of cases of uncomplicated streptococcal infection, is more developed in those patients with rheumatic and possibly nephritic manifestations.

SUMMARY

(1) The blood of patients with rheumatoid arthritis is susceptible to streptococcal fibrinolysis. (2) The

permission to study cases at several of the London County Council hospitals, and Dr. Donald MacIntyre for permission to study cases at Plaistow Fever Hospital. Finally I wish to thank Prof. Francis R. Fraser, of the British Postgraduate Medical School, for much advice and criticism.

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SOUTHAMPTON CHILDREN'S HOSPITAL.—The Bishop of Winchester has dedicated and opened a new Jubilee wing at this institution, which includes a new out-patient department and consulting-rooms. There is also a complete operating-theatre block.

RHEUMATOID ARTHRITIS BELIEVED TO BE OF TUBERCULOUS ORIGIN

A REPORT OF TWO CASES

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THE idea that polyarthritis in adults may sometimes be due to obscure tuberculous foci of infection is not original: the name of the late Prof. Poncet of Lyons is linked with this hypothesis. In England and America, however, it has never been accepted, and we have found only two references to the subject in English medical literature during the last sixty years.^{1 2}

In the two cases to be described here there was reason to suspect a tuberculous aetiology, and after full examination it was decided to try the effect of a minute injection of tuberculin. The results of these injections proved sufficiently interesting to merit publication; since, taken in conjunction with the other investigations described, they suggest that other cases of rheumatoid arthritis might prove to be of tuberculous origin if they were studied from this point of view.

CASE RECORDS

CASE 1.—Mrs. A., aged 49; housewife. Admitted with a history of multiple arthritis since April, 1934, following tonsillitis. The feet and hands were then swollen and the shoulders were painful. Both knees were fixed, but after a visit to Bath only the right knee remained stiff. In December, 1934, this knee was manipulated under an anæsthetic, after which a slight degree of painful movement became possible. But later the swelling and pain in the hands and feet returned and had persisted until admission on August 10th, 1935. The small joints then showed peri-articular swelling and slight limitation of movement. The knees, elbows, and shoulders were all slightly painful on passive movement. In the right knee flexion was extremely limited. The chest showed very slight flattening of the right apex but no adventitious sounds were heard. No other abnormal physical signs, other than some degree of pallor, were detected. It was found that both the patient's parents had died of tuberculosis, but the patient herself had always been healthy except for pneumonia in December, 1933.

Radiography of the right knee showed general decalcification and a small erosion at the joint surface. The left first metatarsophalangeal joint showed absorption of cartilage, roughening of the articular surface, and some lipping. The cervical spine showed erosion and absorption of discs C. 4-7, with slight lipping in the lower dorsal region (Dr. G. T. Loughborough).

The intradermal tuberculin tests were as follows:—

Mantoux (O.T.) 1:10,000,	
at 24 hours erythema and induration	2×2 cm.
" 48 " " " "	2.5×2 "

The test was repeated using Parke Davis's "protein purified derivative" (P.P.D.) tuberculin which is claimed as a more specific substance than O.T. The results were:—

P.P.D. 0.00002 mg. at 24 hours showed erythema and slight	
induration 5 mm. diameter.	
" 0.005 mg. " 24 hours showed erythema and induration	2.5×2.5 cm.
" " " 48 hours showed erythema and induration	5 cm. $\times$ 3 cm.

Thus these tests were strongly positive. There was no focal or general reaction. The complement-fixation test for tuberculosis was also positive (+ ± ± 0).

The sedimentation-rate was 5 mm., 25 mm., 65 mm. (Westergren's method). A sample of blood was sent to Prof. E. Löwenstein of Vienna, the result ultimately returned being negative for the tubercle bacillus.

On August 22nd a subcutaneous injection of tuberculin 0.0001 mg. (T.R.) was given. On the next day the site of the injection was red and indurated (7 cm. diameter). All the joints were more painful, especially on full extension. Headache and malaise were complained of although there was no rise of mouth temperature. The rectal temperature was 1° F. above normal. On the next day rales were noticed at the right apex and the percussion note was impaired. The chest was accordingly radiographed and an area of irregular mottling "possibly due to tuberculosis" was seen. Three days later the general malaise and headache had disappeared but the small joints were very painful and the swelling of all affected joints was rather increased. The rales at the apex of the lung were no longer heard and a further X ray examination showed that the mottling was still present but less in extent than in the previous film. The sedimentation-rate was now 7 mm., 18 mm., 78 mm.

The joints which were painful were treated with hot paraffin wax, and calcium acetylsalicylate was given in moderate doses by the mouth. On discharge on Sept. 12th the reaction had disappeared and the swelling of the small joints was rather less than on admission and considerably less painful. No change could be detected in the right knee which had only a very slight painful range of movement. The chest condition appeared to be quiescent, but in spite of the decrease in clinical symptoms the sedimentation-rate of the blood had increased to 20 mm., 25 mm., 72 mm.

The patient is now reported (Oct. 12th, 1935) to be improved as to the joints, but to have a slight cough without sputum.

CASE 2.—Miss B., aged 20; window-dresser. The history started in 1931 with sudden pain and swelling of the left knee with headache and malaise. The patient was put to bed for six weeks after which the pain, but not the swelling, disappeared. In March, 1932, the knee again became painful and she complained of palpitations. There was then comparative quiescence until March, 1933, when the same trouble occurred. After a month in bed, with treatment, the swelling disappeared for the first time since its onset. The other knee, however, was at this time slightly swollen and she complained of extreme fatigue and pallor. She was treated by one of us, for wasting of quadriceps and the swelling, at the B.R.C.S. Clinic for Rheumatism, and subsequently sent to a convalescent home. While there, she developed pain in both sacro-iliac joints and the swelling returned in both knees. In November, 1933, these were put into plaster till December. On removal of the plaster the pain and swelling recurred, so the knees were replaced in plaster until February, 1934. She was meanwhile receiving treatment on general lines for her condition.

On admission in May, 1935, the Wassermann was negative as was the complement-fixation test for gonorrhœa. The blood sedimentation-rate was much raised (i.e., 66 mm.—90 mm.). Radiography revealed no evidence of spondylitis and no changes in knees except a general decalcification (Dr. S. G. Scott); the joint fluid yielded no evidence of tuberculosis. A number of brown scars were discovered on the front of the legs and ankles and it appeared that in 1934 the patient had suffered with a superficial ulceration of the tubercloid type which cleared up under treatment at St. Bartholomew's Hospital. An exploratory arthrotomy of the right knee-joint had also been carried out there and areas of non-specific inflammation were found which were said not to give definite evidence of tuberculosis.

The patient was again admitted on July 11th, 1935, to the Hospital of SS. John and Elizabeth, when her general condition seemed to be improved but both knees showed peri-articular swelling. There was little limitation but some pain and considerable crepitation on movement. The temporo-maxillary joint was also stiff and painful. There was no rise of temperature. The X ray changes showed now "a moderate degree of kyphosis. The sacro-iliac joints both showed increased density of bone in joint

areas with a blurring of detail in upper right portion. There was general decalcification" (Dr. Loughborough). The blood sedimentation-rate was still raised (58 mm.-101 mm.) and the complement-fixation test for tuberculosis negative. Apart from the ? tuberculous ulceration which had occurred in 1934 there was no history pointing to tuberculosis, and radiography produced no evidence of pulmonary tuberculosis. The Mantoux test, however, was positive at 1:10,000 with O.T. and intensely positive with P.P.D. tuberculin (kindly supplied by Messrs. Parke, Davis and Co.).

Five days after the first of these test injections an area of induration surrounded by a zone of erythema appeared on the right leg near the old scars. It increased to 3 cm. in diameter and was diagnosed (Dr. G. Dowling) as being "probably of a tuberculous nature." On the ninth day from the first intradermal injection of tuberculin a general and focal reaction occurred. The temperature rose to 100° F. and there was pain and swelling in the right ankle followed a few hours later by a similar condition in both knees which became hot, red, and swollen. The blood sample taken at this period and sent to Prof. Löwenstein was subsequently returned as positive for tubercle bacilli. Pyrexia, with headache and feeling of great exhaustion, continued for seven days reaching a maximum on the third day (100.8° F.). The swelling of the knees then also subsided but the ankle remained swollen and painful for a further ten days. Subsequently the patient stated that she felt much better. The ulceration disappeared leaving a strongly pigmented brown scar and the movement in all the joints was full and

painless. She was sent to a convalescent home. Her blood sedimentation-rate on discharge was 85 mm.-116 mm.-140 mm.

SUMMARY AND CONCLUSIONS

These two women with rheumatoid arthritis both responded to the injection of a minute dose of tuberculin by a general pyrexial reaction. A focal reaction also occurred in all the affected joints, and in one case lasted for ten days. In addition to these reactions, in Case 1 an area of hitherto undetected infiltration of the lung was rendered evident by the appearance of physical signs, confirmed radiographically, while in Case 2 a cutaneous tuberculide developed on the leg shortly after the injection. This ultimately healed. Most of the pathological tests usually employed for the diagnosis of tuberculosis were positive in both cases. Samples of blood were sent to Prof. Löwenstein for examination by his special methods, and in Case 2 the report was positive. We believe that an unsuspected latent tuberculous focus was present in each case and was activated temporarily by the injection of tuberculin. Such a focus might prove to be the underlying cause of rheumatoid arthritis in other cases.

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CLINICAL AND LABORATORY NOTES

SPONTANEOUS SUBARACHNOID HÆMORRHAGE

By H. D. PICKLES, M.C., M.R.C.S. Eng.
AND

A. H. DUNKERLEY, B.Chir. Camb.

We thought this case worth recording because of its dramatic onset when one of us was present and because of the characteristic train of symptoms and physical signs.

The patient was a man, aged 58, who had worked as a cellarman for many years. He had long complained of several symptoms. The first was indigestion, but radiography of the stomach on two occasions had revealed no cause of this. The second was difficulty in swallowing, but here again X ray examination was negative, though the radiologist remarked on the excessive calcification of the arteries. The patient's features were so typically tabetic that a Wassermann test had been done a year previously, but this was negative. He also had a striking raw-beef tongue with a "scrotal" surface. There was no history of headaches.

On Jubilee Day he rose at 7.30 A.M. and had a large breakfast at 8.15; he brushed his clothes, got the coal in, and was watching part of the town's Jubilee procession when he suddenly experienced intense headache, and had to sit on the doorstep. One of us arrived within a few minutes and after examining him asked if he felt sick, to which he replied "No"; but a few seconds later he vomited violently and then collapsed and became unconscious. His breathing was stertorous and he vomited off and on for three hours. He then partially recovered and was able to answer questions, though with difficulty, as he had a partial aphasia accompanied by a right-sided paresis.

The headache was the chief complaint and as an injection of morphia gave little or no relief lumbar puncture was performed early the next morning under great difficulties, since the patient was lying on a billowy feather-bed. The result was most dramatic, the patient falling asleep while the needle was still in position. Almost pure blood was obtained under great pressure, and was shown to be spinal fluid containing blood, and not due to the needle

injury, by the following criteria: (1) blood was equally present in three separate lots of fluid; (2) there was no clotting; and (3) the supernatant fluid was blood-stained. The urine contained no albumin but a definite trace of sugar. Head-retraction was conspicuous from the beginning and continued to the end.

Except for intervals of two to three hours on the third and fourth nights of the illness, when the patient had two further hæmorrhages, he was conscious throughout and could make himself understood. Lumbar puncture was performed again on the third and the fourth days, since nothing else brought relief to the severe headaches and the patient always slept for several hours after it. The spinal fluid was still under great pressure on the third day and contained the same amount of blood, but on the fourth day there was considerably less.

Ophthalmological examination was extremely difficult because of photophobia, and nothing definite could be ascertained. As is usual in these cases the clinical signs were astonishing in their changes from day to day. Day after hæmorrhage: right pupil normal and reacts to light; left pupil enlarged and not reacting to light; knee-jerks sluggish; tendency to plantar extensor response on the right side. Second day: pupils now both equal and reacting to light; right knee-jerk active; extensor plantar response on right side. Third day: pupils both very contracted and scarcely reacting to light.

A further extensive hæmorrhage took place on the morning of the fourth day from the onset, and the patient's respiratory centre failed. A post-mortem examination was unfortunately refused.

Westerham, Kent.

A CASE OF AGRANULOCYTIC ANÆMIA

By HELEN M. GREGORY FOSTER, M.R.C.S. Eng.
AND

MARGARET DOUGLAS, M.B. Lond.

This is the record of a case of extreme granulopenia, though not of true agranulocytic angina, which responded to treatment with pentnucleotide. The patient was suffering from rheumatoid arthritis, for which she had been taking Novalgin in therapeutic

doses over a period of five years until she became acutely ill.

The patient was a woman aged 48 who, when first seen on March 21st, 1935, had been ill for five days, the illness starting with a cold. After the cold, she had severe headache, swelling of the face and neck, and mental

10 c.cm. pentnucleotide was given each day. At the end of that time the leucocytes had risen to 5000, with 63 per cent. polymorphs, and the injections were discontinued.

On March 30th a generalised erythematous rash appeared, of unknown cause but apparently toxic in origin; a week later jaundice developed, with bile in the urine and pale stools. At this time there was destruction of both red and white cells, the red cells dropping to $4\frac{1}{2}$ million and the white cells to 1260. Injections of pentnucleotide were started again therefore, and continued, at first daily and later on alternate days, until the white cells had again reached 5000 and had remained stationary at that point. The general condition of the patient was by this time very satisfactory; the temperature and the pulse were normal, the wound in the neck had healed, desquamation was taking place, and the jaundice had disappeared. From this time on convalescence was smooth; the blood picture did not change, the white cells remaining 5000 per c.mm. with 60 per cent. polymorphonuclears.

The illness lasted three months and the patient has remained well up to the time of writing. The blood picture on Nov. 29th was: red cells, 4,000,000; white cells, 8000; polymorphs, 81 per cent. The patient had a sty at the time of the last blood count, and responded to the infection.

Recovery in this case was due to treatment with pentnucleotide, as no other specific remedy was used, and the blood picture showed that improvement started within 24 hours of the first injection, contrary to expectation. There was after each injection a definite reaction: the temperature rose and the respiratory rate increased; there was precordial distress, dyspnoea, headache, and mental dullness. In the early days this reaction was not so marked, as headache and mental dullness were part of the general picture of the illness; but as the patient improved, and the

toxæmia disappeared, it became clear that the reaction occurred some hours after each injection of pentnucleotide, lessening in degree as the patient became more convalescent.

This case appears to belong to the group of granulopenia associated with certain drugs, the condition being discovered as the result of a general infection which the patient was unable to localise owing to her lack of granular cells. Localisation in the neck took place after the rise in the number of white cells which followed the injections of pentnucleotide. Amidopyrin is used in the manufacture of novalgin and the patient had been taking this drug in therapeutic doses for five years, with one interval of nine months, until she became acutely ill.

An interesting point is that since this last acute illness, the condition of the patient's joints has improved, movements being more free and walking easier.

We should like to express our thanks to Dr. Dennis Embleton and Mr. Cecil Flemming for their valuable help in this case.

Stanmore, Middlesex.

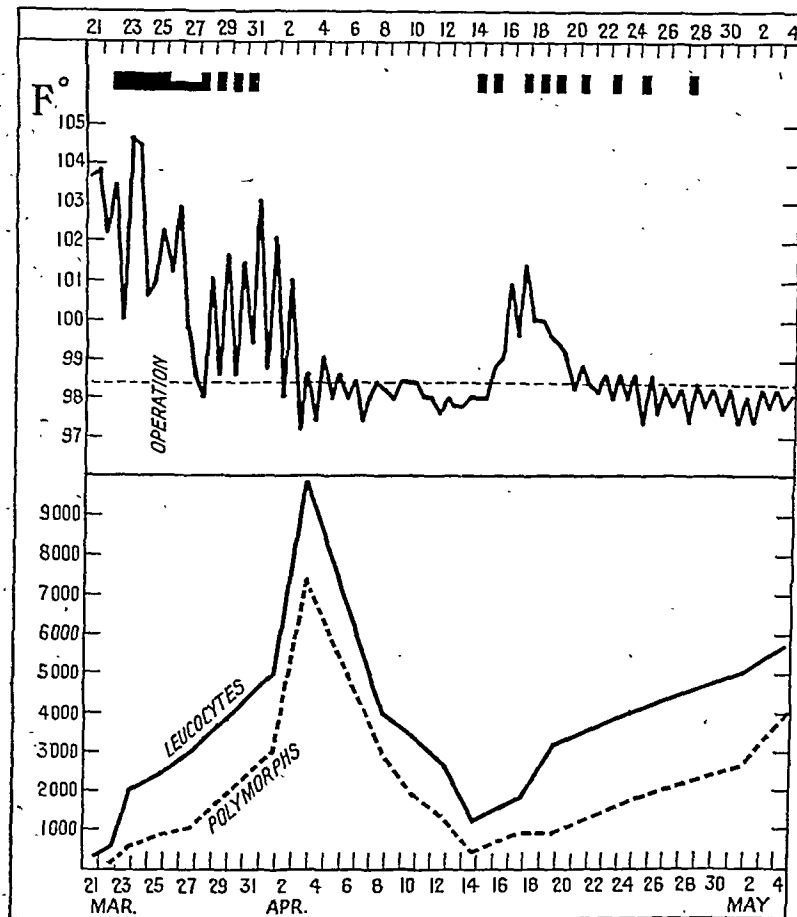


Chart of temperature and blood changes. The black rectangles show the dosage of pentnucleotide, which was at first 10 c.cm. twice daily, then 5 c.cm. twice daily, and later 10 c.cm. once a day or less.

distress. On this day she was gravely ill and delirious; the temperature was 103°F. , the pulse-rate 100, and on the left side of the neck below the jaw there was a diffuse hard cellulitis; in the mouth there was a mild ulceration of the gums and some oedema of the pharyngeal wall; there were sordes on the face.

A blood count next day showed that there were 6,000,000 red cells and 600 white cells, with 20 per cent. polymorphonuclears (see Chart). Treatment, started the same day (the sixth of the illness), consisted of injections of 10 c.cm. Pentnucleotide intramuscularly twice daily; no other specific treatment was given. General treatment consisted of the administration of much fluid with glucose, brandy, and champagne; Antiphlogistine was applied to the neck.

The blood picture began to improve on the day after the injections, the leucocytes rising to 2000 with 28 per cent. polymorphonuclears, although the general condition of the patient was worse; she was drowsy and the temperature was 104° . On the fourth day of the injections, signs of localised pus formation appeared in the area of cellulitis in the neck and an abscess was opened. A culture from the pus grew a mixture of *Staphylococcus aureus* and non-hemolytic streptococcus. On the fifth day of treatment the general condition of the patient was much improved; the temperature fell to normal; the leucocytes had risen to 2900, with 37 per cent. polymorphonuclears. On the next five days one injection of

PLEURITIC PAIN RELIEVED BY ARTIFICIAL PNEUMOTHORAX

IN A MAN OF EIGHTY-FOUR

By F. HARWOOD STEVENSON, M.D., M.R.C.P. Lond.
CLINICAL ASSISTANT TO BROMPTON HOSPITAL; LATE REGISTRAR
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THE following case appears to be worth recording both in confirmation of the experience of Dr. Cedric Shaw¹ and in view of the advanced age of the patient, 84.

He was a small frail-looking old gentleman and was first seen on July 15th, 1935, in consultation with Mr. R. Trevor Jones. He had had a raised temperature for two days with cough and a very severe "catching" pain over his right lower chest. There were signs of consolidation in the right lower lobe and pleurisy. The old man sat in bed with a constant expression of anxiety on his face, grunting or suddenly uttering short sharp cries of

pain whenever he had taken any but the shortest and most judicious of breaths. Radiography showed patchy consolidation in the right lower lobe. There was no fluid.

On July 16th his temperature was lower but his condition appeared desperate. Lack of rest was obviously going to play a large part in the question of his recovery. The pain was now even more severe. An artificial pneumothorax was induced after an injection of omnopon gr. $\frac{1}{2}$, ephedrine gr. $\frac{1}{2}$, and atropine gr. $\frac{1}{100}$, 300 c.cm. of air being allowed to enter. The pressures before and after were: -2 -12 and +3 -10 cm. of water. The patient was much relieved although—a point of interest—the rub was by no means abolished. The next day the pain had to some extent returned and a 200 c.cm. refill was given, 0 -13 to +2 -9. For the next three days air could be detected in the pleural cavity and he was practically free of pain. On July 20th he had very slight pain and thereafter was entirely free. No more refills were given. His temperature had by now completely settled and he made a remarkably good recovery. On July 31st he was carried into the garden, just 15 days after the induction of his pneumothorax.

Radiological examination finally showed complete resolution of the lung. No fluid developed at any time.

¹ THE LANCET, Dec. 7th, p. 1280.

MEDICAL SOCIETIES

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION

At a meeting held on Dec. 10th, with Dr. E. PICKARD, the president, in the chair, Prof. WINIFRED CULLIS read a paper on

Physiology and its Debt to Medicine

She said that physiology and the medical and surgical aspects of medicine were so closely related that it was almost impossible to think of one without the other. It was the aim of the physiologist to find out the normal working of the body whilst the clinician tried (1) to prevent departures from the normal, (2) to restore normal functioning. A great difference between their methods of approach, however, was that while the work of the physiologist was essentially experimental, the duty of the clinician was to the individual patient. He could observe and study the effects of treatment but could only rarely carry out experiments with proper controls. In the not too remote past, physiologists had been looked upon by their clinical colleagues as a body of academic workers interested mainly, to quote a commonly used phrase, in "making frogs jump"! To-day, the teaching in the laboratories and in the wards was gradually coming into close relationship. As an example of the rapprochement, Prof. Cullis quoted the elucidation of the function of the parathyroids where the laboratory workers had demonstrated the effects of hypoparathyroidism and the clinicians those of over-activity of these glands. The debt of medicine to physiology was a well-worn topic and the classical examples of it were familiar to the point of boredom, but the reverse picture was less commonly presented. The extremely interesting work of Harvey Cushing showing the possible relationship of so-called "hyperacidity" to disturbances in the hypothalamic region fitted in with that of Beattie on the autonomic nuclei in this region. This again would perhaps link up with the recent production by Dods of changes in the gastric mucosa similar to those associated with chronic gastric ulcer, by subcutaneous injections of very large doses of pituitary extracts.

The discoveries of Banting and Best and of Minot were made by medical practitioners possessed with

a desire and a determination to treat and cure a specific disease. For the discovery of insulin, previous work, though unsuccessful, had indicated the line of attack, but at first there did not seem to be any real connexion between investigations by Whipple on the dietetic factors influencing the elimination of bile-pigments and the discovery by Minot of the liver treatment for pernicious anaemia. The connexion was there however, and it became clearer when Murphy and Castle added their contributions to Minot's researches. Prof. Cullis discussed the bearing on physiology of the work of Lucy Wills and of Helen Mackay in connexion with other anemias, and the flood of laboratory investigations which had followed Mary Walker's successful use of prostigmin in myasthenia gravis was the most recent example. Physiology and medicine were in essence different aspects of the same science, and workers in the one field could give immense help and stimulus to physiology from the clinical side.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

At a meeting of this society, held at Leeds on Dec. 13th, Mr. A. Gough delivered a presidential address on

Ovariectomy

He said that although the physical signs might lead one to make a diagnosis of unilateral tumour, it was always wisest to warn the relatives that both ovaries might have to be removed and also that tumours which appear to be innocent may possibly be malignant. In young people during the active period of sexual life, an effort should be made to preserve at least a portion of an ovary. The features suggestive of malignancy were solidity, satellite nodules in the pouch of Douglas, ascites, pain, and cachexia. A primary growth should always be sought for. In doubtful cases, X rays might be useful. The nature of the growth could only be ascertained by exploratory operation. Mr. Gough said that he had very seldom found the patient to be unfit for operation and had only twice refrained from operating because of extreme age and feebleness. In the presence of serious systemic disease, a short delay might get the patient into a safer condition.

Preliminary tapping was advised before removal of very large cysts. Removal by the vaginal route need hardly ever be considered. He favoured paramedian incision as this made provision for a stronger scar. Any adhesions should be separated, especially from the intestines, before emptying the cysts. The pedicle was best dealt with in small segments. Transfixing the pedicle involved danger of puncturing a vein, and it was best to cover the stump with peritoneum whenever possible. It was advisable to remove the second ovary when it was involved in the pathological process, in malignant cases; and in patients after the menopause.

Mr. Gough gave statistics of 180 cases, describing in detail the four fatal cases: of the whole, 126 were simple cysts; 25 were malignant; 16 were twisted; 7 were suppurating; and 6 had previously ruptured. These figures did not include follicular cysts or chocolate cysts of the ovary.

Corporeal Recurrence after Radium Treatment of Carcinoma Cervicis

Mr. P. MALPAS (Liverpool) said that corporeal recurrence of carcinoma cervicis is not a common condition. These cases gained importance from the fact that they represented the type of recurrence most amenable to further treatment. The speaker had encountered 5 cases amongst 359 cervical carcinomata treated with radium. The absence of gross cellular pelvic infiltration justified the performance of secondary hysterectomy. All the cases were Stage I. or Stage II. growths at the time of radium treatment; three of them were adeno-carcinomata. The syndrome produced by corporeal recurrence was late onset of irregular lower abdominal and lumbar pain indicative of uterine and renal distension, and a return of the watery discharge. On examination the uterus was found to be enlarged and globular. X rays showed ureteral obstruction. One of the patients died four days and another nine months later after operation, from uræmia. One died of very rapidly growing recurrence after remaining free from symptoms for five months. A fourth case remained well for 14 months and then began to show evidence of malignant distension of the colon. The last patient was still alive two years after the hysterectomy and five and a half years after the original radium treatment. In these cases excretion pyelography seemed to show ureteric obstruction, and relief after removal of the uterus. Mr. Malpas emphasised the importance of using a uterine applicator of sufficient length when treating cases of carcinoma cervicis by means of radium. In his view hysterectomy had no place in the secondary treatment of carcinoma cervicis until at least 12 months after radium had been applied.

Dr. J. W. BRIDE (Manchester) thought that recurrence in the body was much commoner than was usually surmised.

Mr. J. E. STACEY (Sheffield) thought that it was difficult to estimate whether the recurrence was corporeal or whether the body was secondarily involved.

Prof. MILES PHILLIPS (Sheffield) asked whether the corporeal growth could not possibly have been present at the time of the radium treatment.

Mr. M. DATKOW (Liverpool) said that he had operated on several cases after radium treatment for cervical cancer because the uterus had become mobile and the body had remained large, and had found corporeal growth present. In one of the cases

healing of the vaginal vault was greatly delayed and the patient suffered much pain.

Vitamins in Cases of Habitual Abortion

Mr. D. W. CURRIE (Leeds) described his results in the treatment by means of wheat germ oil of 30 patients who had suffered repeated abortions. Eighteen of these had reached full term, two the thirty-sixth week, and one the thirty-fourth week. The remaining nine pregnancies lasted over five months. Two of the 21 children delivered died subsequently. The presence of vitamin E was essential for the continuance of pregnancy to a successful termination; Mr. Currie therefore advised that in these cases 3 minims of wheat germ oil should be taken daily in capsules by the mouth, until the onset of labour.

Dr. RHODA ADAMSON (Leeds) said that she had treated with success, by means of wheat germ oil, several patients suffering from renal disease. Living babies were obtained; and her impression was that the children were inclined to be rather overweight.

Miss RUTH NICHOLSON (Liverpool) had treated two patients in this way, one of whom had aborted.

Prof. MILES PHILLIPS showed a specimen of sarcoma of the isthmus uteri, and Mr. J. E. STACEY a section of sarcomatous change in a fibroid.

ROYAL ACADEMY OF MEDICINE IN IRELAND

At a meeting of the section of surgery on Nov. 1st Mr. T. A. BOUCHIER-HAYES demonstrated a

New Photographic Method

The photograph, he said, was taken in the ordinary way and the resulting negative was then enlarged on to an X ray film. The final picture was much improved in this way. Even for such difficult subjects as the cut surface of the brain there was no need to use a filter, and artificial light made an ideal photographic illumination. The dark-room procedure was the same as for developing X ray negatives. By this method a permanent, light, and easily filed record was available, needing for demonstration only an X ray viewing-box.

Mr. J. J. MURPHY, radiographer to the Richmond Hospital, who was responsible for the technique of the method, said that the photographs of soft specimens were taken directly on a plain X ray film. These films were duplicated. It was possible to increase the high lights considerably, and if they went too high some of the surface of the film could be scraped off. No light filter at all was required. It was possible to use an X ray tank and developer, and this made it unnecessary to disturb the dark room as much as if a panchromatic developer was used. When enlarging, it was necessary to have a background which would not reflect light. The cost of the films was exactly the same as that of X ray films.

HOSPITAL SUNDAY.—There has been a decline in the collections for the Metropolitan Hospital Sunday Fund of £2684 since 1934, and at a meeting of the fund held at the Mansion House on Dec. 16th it was suggested that in future churches might group together to cover a whole parish instead of each making a separate collection.

REVIEWS AND NOTICES OF BOOKS

Health and Human Progress

By RENÉ SAND, Lecturer at the University of Brussels. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1935. Pp. 278. 10s. 6d.

Dr. René Sand, an international authority on public health, has in this volume brought together a vast amount of information on the scope and methods of what he calls "sociological medicine." This he defines as "the art of prevention and cure, considered in its scientific basis and its individual and collective applications, from the point of view of the reciprocal relations which connect the health of man with his living conditions." Dr. Sand takes a hopeful view of the advances that it is within the power of medicine to make towards the attainment of Aristotle's ideal of the good life. Medicine as he sees it is not limited to the subjects included in the medical curriculum, but takes account of all the conditions—biological, environmental, and economic—that menace the physical and mental health of mankind. He points out that a fund of knowledge has been accumulated which should empower a modern community to make the lives of its citizens far more healthy and complete than they are anywhere at the present time. By means of illustrations drawn from many countries he shows what has already been done to conquer disease and premature death, and not only to lengthen human life, but to make it more worth living; he indicates in what directions and by what methods further progress may be expected. Dr. Sand appreciates that we need more knowledge to deal effectively with the problems of health and disease; more complete and accurate statistics of social phenomena, for example, and a more general uniformity of statistical statement so that the recorded experience of different countries may be compared. He shows that official statistics may usefully be supplemented by non-official investigations such as those recently made in America by the Committee on the Costs of Medical Care. But what is more immediately needed is a fuller application of the knowledge that we already possess. His thesis is that human life could be made richer for all if we would take the trouble to make it so, and his stimulating and suggestive pages certainly bear out his contention.

The book, to which Mr. Édouard Herriot contributes a preface, may be recommended as a non-technical guide to citizenship and public welfare. Where so wide an area is surveyed a few slips are perhaps inevitable; for example, on p. 159 the relatively low infant mortality in Lancashire during the Cotton Famine is attributed not to the American Civil War but to the siege of Paris. Many readers will think that Dr. Sand underestimates the value of social insurance, and is unduly optimistic in his expectation that Soviet Russia could furnish "complete data" for statistics of morbidity; certainly the utility of the book would have been enhanced if the sources of the facts and figures quoted had been more precisely stated. The book as a whole, however, is of sterling merit. The translation from the revised French text has been well done by Dr. C. F. Marshall.

Arthritis and Rheumatoid Conditions

Second edition. By RALPH PEMBERTON, M.S., M.D., F.A.C.P. London: Baillière, Tindall and Cox. 1935. Pp. 455. 27s. 6d.

In its first edition this book marked an important advance in our understanding of and the methods

of approach to the arthritides. The subject was treated from all aspects, the biochemical section being particularly significant of the modern approach to the problem. Since that time the literature on this group of diseases has increased enormously, and the second edition takes note of the more important and useful of the contributions. Some new illustrations have been added to show more clearly certain stages of the pathology of the condition, and the section on the problem of infection has been elaborated and includes some new work on the rôle of the streptococcus. Several additions have been made to the so-called "dynamic pathology," notably on plasma proteins, phosphatase, acid-base balance, and water metabolism. The section devoted to the rôle of the intestine has been enlarged and incorporates a good deal of Fletcher's work and also a discussion of the relation of the conditions common to malnutrition and avitaminosis. Diet is considered in great detail; in the section on drugs and medicinal measures liver therapy is discussed. In all respects the book seems to have been brought completely up to date.

Puerperal Gynæcology

By J. L. BUBIS, M.D., F.A.C.S., Consultant in Obstetrics, Gynæcologist, Mount Sinai Hospital, Cleveland, Ohio. London: Baillière, Tindall and Cox. 1935. Pp. 200. 16s.

For nearly twenty years Dr. Bubis has advocated and practised the repair of injuries of the cervix, and pelvic floor, resulting from childbirth. In this book he describes the methods he employs, and records in detail results so startling in their excellence that they surely demand more than a passing attention. Realising that very few women are able to go through labour without some injury and that nature rarely cures even the smallest ones satisfactorily, Dr. Bubis holds that no laceration is small enough to be neglected. In 1916 he first attempted a procedure he had been planning for a long time, and operated shortly after childbirth to repair old as well as new lacerations of the birth canal. After the patient was delivered naturally of her tenth baby examination showed the presence of a lacerated cervix, a large cystocele, a relaxed perineum, and hæmorrhoids. Operation, advised years before, had been postponed on grounds of domestic obligations, expense, and timidity. One week after delivery a complete repair was performed and the results were all that could be desired. With improving judgment and skill the time between the delivery and repair was shortened and by 1920 it had become the routine procedure to repair all old as well as new lacerations immediately or shortly after childbirth, unless some surgical contra-indication presented itself.

The experience and results obtained in nearly 10,000 such cases seem to refute most of the objections that have been raised to this procedure. The claim that tissues are so œdematous, bruised, and distorted at this time as to render it impossible to differentiate between temporary and permanent disturbances is not apparently justified. Nor is there any evidence that healing is interfered with by the presence of lochial discharges. There seems moreover to have been no appreciable increase in the puerperal morbidity. This and a maternal mortality over so great a number of cases of under 2 per 1000 does not suggest that the performance of repair work

immediately following delivery adds in any way to danger of childbirth. Dr. Bubis states his belief that many are deterred from attempting this technique because they do not feel prepared to devote the extra time during the night or day to give this service. We do not believe that this consideration would weigh for a moment if the procedure were proved to be of advantage to the mother or to the community. Dr. Bubis claims that it is desirable on all grounds. His book is attractively written and will doubtless gain the serious consideration it demands.

A Practical Handbook of Midwifery and Gynaecology

Second edition. By W. F. T. HAULTAIN, M.C., F.R.C.S. Edin., M.R.C.P., F.C.O.G., Gynaecologist, Royal Infirmary, Edinburgh; and CLIFFORD KENNEDY, F.R.C.S. Edin., M.C.O.G., Assistant Gynaecologist, Royal Infirmary, Edinburgh. Edinburgh: E. and S. Livingstone. 1935. Pp. 356. 15s.

To condense the whole of obstetrics and gynaecology into some three hundred odd pages and without serious omissions, to include many recent developments, and to provide adequate illustrations is no mean achievement. Admittedly the result is difficult to read, since the text consists for the most part of tables and classifications. This is not a book suitable for the student beginning his work, but for one who wishes to revise the subject prior to examination, and the practitioner who needs a work for rapid reference will appreciate it. The matter is eminently sound and orthodox and is set forth clearly. A defect is that insufficient stress is laid on the relative ease or difficulty of the manipulations described as alternatives. Only six pages are allotted to the important subject of antenatal care. The book is excellently produced.

Clinical Parasitology and Tropical Medicine

By DÁMASO DE RIVAS, B.Sc. Biol., M.S., M.D., Professor of Parasitology in the University School of Medicine, and Assistant Professor in the Department of Pathology, University of Pennsylvania; in collaboration with CARLOS T. DE RIVAS, B.A., M.D., Pathologist to the Santo Tomas Hospital, Panama. London: Henry Kimpton and Co. 1935. Pp. 367. 22s. 6d.

THE object of the authors has been to give in this book the modern conception of tropical and parasitic diseases from the standpoint of cause, pathology, and symptomatology, with the complete life-histories of the parasites concerned. The method of diagnosis advised is a modified Telemann technique. In several respects the work is unsatisfactory. For example, under anthelmintics there is no mention of the active and lethal principle of oil of chenopodium or of the need to regulate dosage by its content in the oil; the need for participation of thymol is not emphasised, though it is on this that its efficacy depends. A mixture of equal parts of glycerin and a 30 per cent. solution of magnesium sulphate is highly recommended as a parasiticide, especially when followed by an injection into one or other end of the alimentary canal of a solution at 50°-54° C. with the intention of maintaining one of 45°-47° in the duodenum or rectum for 5 to 15 minutes. In the treatment of malaria hypodermic injections are preferred to intravenous ones, nothing

being said of the danger of the production of sloughing with unsightly scars or of the retention of quinine in local dead tissues; in the section on protection against malaria the fan or punkha is not mentioned. There are various contradictions and inaccuracies in the section covering nematodes, and the figures of *Mf. bancrofti* in the blood will not be found to resemble those described by other writers. It is unfortunate that the authors do not adhere to the International Code of Zoological Nomenclature. The sections on bacterial diseases and those of unknown causation which complete the volume are less challenging.

Infant Nutrition

A Text-book of Infant Feeding for Students and Practitioners of Medicine. Second edition. By WILLIAMS McKIM MARRIOTT, B.S., M.D., Professor of Pediatrics, Washington University School of Medicine; Physician in Chief, St. Louis Children's Hospital, St. Louis. London: Henry Kimpton and Co. 1935. Pp. 431. 20s.

THIS comprehensive monograph has been extensively revised, and though the book as a whole has been slightly decreased in size by the omission of matter belonging more properly to the domain of general paediatrics, new sections have been added. As might be expected, the principal changes are in the chapters dealing with vitamins and with allergy. The rôle of infection in the causation of gastro-enteritis is discussed with moderation. Prof. Marriott considers that there are two types of mastoid infection to be found in infants suffering from diarrhoea and vomiting: a primary type, the drainage of which will improve the gastro-intestinal symptoms, and a secondary type, occurring in the course of the disease and associated with an exacerbation of symptoms in which drainage cannot be expected to bring about equally good results. The work as a whole provides the clinician with a clear résumé of the scientific principles underlying the feeding of infants and the treatment of nutritional disturbance.

Anatomy of the Nervous System

Fifth edition. By STEPHEN WALTER RANSON, M.D., Ph.D., Professor of Neurology and Director of the Neurological Institute, Northwestern University Medical School, Chicago. London: W. B. Saunders Co., Ltd. 1935. Pp. 501. 27s. 6d.

THIS work has been revised and brought up to date without material addition to its bulk. Many references to recent important work have been incorporated, particularly in the section on the central visual pathway, a subject to which the author and his co-workers have made substantial contributions. Readers will be specially grateful for the list of references at the end of the book, a concession all too rare in works of this type. Additional illustrations have been grouped together as an atlas at the end of the text. These include photographs of Weigert preparations of whole coronal sections of the cerebral hemisphere at different levels. An excellent series of drawings of transverse sections of the brain stem at 20 levels has also been added: in each instance a sketch in profile of the brain stem has been marked to show the level illustrated, and explanatory notes complete the demonstration.

THE LANCET

LONDON: SATURDAY, DECEMBER 28, 1935

HOSPITALS AND THE RATES

PRINCE ARTHUR OF CONNAUGHT, presiding last week at the Court of Governors of Middlesex Hospital, usefully drew attention to the heavy burden of rates. The new buildings of the Middlesex, he said, had been considered as a whole for rating purposes by the Marylebone Borough Council; this meant some relief from the worst rigours of assessment; but in his view no recognised hospital should be rated at all. He criticised the anomalies of the present system whereby some hospitals (as at Newcastle) are not only de-rated but are actually subsidised, while some are assessed as if they were purely commercial undertakings; somewhere up and down the scale between these two extremes came others such as the Middlesex itself. "The municipal hospitals, working with us for the same purpose—the health of the community—and getting their medical officers from our training schools, are not merely free from rates but are paid for from the rates; we, who have to seek our income largely from the generosity of the public, are rated to subsidise those whose costs are provided from the rates—an inequitable and fantastic anachronism."

The unfair handicap of the voluntary hospitals in this respect is indeed notorious. Parliament has in time past been willing to exempt or relieve from rates such public buildings as churches and chapels and lighthouses, and also other semi-public institutions such as certain non-provided schools and scientific and literary societies. It would have needed but a slight extension of this principle to make the relief of hospitals a part of the general law of the land. I think that the law has conferred some benefit in

PRINCE ARTHUR did not explain his reference to Newcastle-upon-Tyne, but that ancient borough has certainly been public-spirited. The valuable site on Spital Tongues of the old Hospital of St. Mary Magdalene (certainly an almshouse rather than a hospital in the popular sense) enabled the corporation long ago to secure a scheme whereby, on the reorganisation of the charity, surplus revenue and capital funds could be applied to the aid of local medical institutions. A section in the Newcastle Act of last August authorised the corporation to contribute at discretion towards payment of the rates and taxes of another medieval hospital in the town and towards the cost of supplying it with gas, electricity, and water. The object of this generosity was again more almshouse than hospital, but the charitable principle is the same. Elsewhere we find other forms of assistance. A few years ago Brighton took powers to reduce its water charges to approved voluntary hospitals. Glasgow in 1929 exempted its voluntary hospitals and infirmaries from rates for education, lunacy,

and parish purposes. Dundee in 1927, and Kilmarnock and Troon last summer, secured authority to subscribe to local voluntary hospitals, and doubtless there are other and earlier instances. The trouble is that these reliefs are given rather as the exception than as the rule. To take money away from the hospitals with one hand and to give it back with the other is in any case a cumbrous and invidious procedure.

It is true that the great voluntary hospitals are, for various reasons, seeking more and more to enlarge the limitations of their charitable objects so as to obtain authority to accommodate paying patients. The St. Bartholomew's Hospital Act of last August is a recent example. By some this new departure may be deemed to fortify the idea that a hospital is a commercial concern. On the other hand, it has now become the national policy to assimilate the positions of the voluntary and the rate-aided institutions. We have seen agricultural and industrial properties de-rated in the endeavour to restore the general prosperity. To restore and maintain the health of the public is not less a national object. The voluntary hospitals may fairly be called a depressed industry. When will their turn come?

SEX HORMONES IN PRACTICE

KNOWLEDGE of sex hormones and their action has advanced astonishingly during the past few years, and it is generally recognised that their application will some day make much of our present gynaecological surgery unnecessary. Most clinicians leave it at that: they feel that the time has not yet come to experiment with these remedies outside the laboratory. This attitude is based partly on caution and partly on the fact that until recently effective doses of the hormones were impossibly expensive, while some of them remain so. It will be agreed that promiscuous administration of endocrine extracts is sometimes harmful and usually valueless; that they must be used only after careful exclusion of relevant organic lesions; and that the user needs a cautious understanding which can develop only from knowledge of physiology. But admitting all this, it seems to us that more interest should be taken, here and now, in the rational treatment of the menstrual and reproductive disorders that incapacitate so many women.

First let us consider inadequate menstrual loss. This may take the form of primary amenorrhoea in which a girl reaches adult life without having a menstrual period. In such cases there are usually signs of gross ovarian deficiency, the most important of these being an under-developed uterus—perhaps no larger than a hazel-nut. Such an organ, infantile in structure, is incapable of normal function, and the first aim of treatment therefore is to promote its growth. KAUFMANN¹ has shown that this can sometimes be done by giving large doses of the ovarian hormone known as oestrin or folliculin (e.g., 200,000 to 4,000,000

¹ Kaufmann, C.: *Proc. Roy. Soc. Med.*, 1934, *xxvii*, 41; *Jour. Obst. and Gyn. Brit. Emp.*, 1935, *xliii*, 409.

international units of crystalline oestrone). The next object is to induce growth of the kind of endometrium associated with normal menstrual bleeding. In an adult uterus this can almost always be done by giving the corpus luteum hormone, progesterin, in doses of 5-50 rabbit units. Assuming success in these two aims, the primary defect—ovarian deficiency—remains to be overcome; for the injection of ovarian extracts is merely substitutive treatment, and it is doubtful how far it can initiate spontaneous menstrual cycles. The fundamental object is to convert the infantile ovary into an adult ovary with normal function. In immature animals this can be done by injecting gonadotropic (gonad-stimulating) principles derived either directly from the pituitary gland or from urine excreted in pregnancy. It would therefore be reasonable in primary amenorrhœa to follow treatment of the uterus (with œstrin and progesterin) by administration of gonadotropic extracts; and there is in fact evidence that in a few cases this has led to the onset of cyclical menstruation. It has to be acknowledged that the extracts at present in use are seldom potent enough to produce any lasting effect on a seriously undeveloped ovary. But where the deficiency is not so great, and we have merely the condition of secondary amenorrhœa, treatment is more promising; and in oligomenorrhœa—so often associated with dysmenorrhœa or sterility—the outlook is far more hopeful. The principles of treatment here are much the same, but some authorities such as CLAUBERG² claim that œstrin by itself suffices for cure. He finds that in immature mice its injection may actually lead to the formation of corpora lutea, and since it is well established that œstrin has no direct action on the ovary this effect must, it seems, be due to stimulation of the pituitary. It has become evident that the ovary and anterior pituitary are complementary in action; too much œstrin depresses pituitary activity while too little makes it unusually apparent. CLAUBERG describes this as the "pituitary release phenomenon"; he believes that large doses of œstrin promote pituitary quiescence and that sudden cessation of them brings about abnormal pituitary activity sufficient to cause formation of corpora lutea in the ovary and consequent changes in the uterine endometrium leading to pregnancy. The dysmenorrhœa often associated with scantiness of menstruation responds, it is said, to œstrin therapy in some 30-50 per cent. of cases.

There are two other important conditions in which treatment with ovarian hormones is especially satisfactory. First, œstrin is found useful—in less heroic doses, and even by mouth—at the menopause. Hot flushes sometimes yield readily to relatively small doses such as 500-3000 international units of oestrone daily by mouth. Treatment induces a sense of well-being and may relieve associated disorders such as pruritus or kraurosis vulvæ and acne rosacea. Secondly, progesterin finds rational employment in

cases where repeated abortion in early pregnancy has no apparent cause, and the proportion of successful results is too high to be fortuitous.

A theoretical objection to using gonadotropic extracts (prolan) is that they may over-stimulate the ovary and thereby damage its function irreparably. This danger will certainly have to be reckoned with when extracts of greater potency become available, but those who have so far used such hormones—chiefly for excessive bleeding—do not seem to be much impressed by it. The results they record vary considerably. HENDERSON,³ for instance, says that he has treated 39 cases of menorrhagia and metrorrhagia with "anterior pituitary-like hormones," of which 31 were relieved and 25 returned to normal menstruation; of the 8 patients who failed to benefit 4 were proved to have local pelvic lesions sufficient to cause the complaint. GEIST and SPIELMAN,⁴ on the other hand, found that this hormone brought about improvement in only 2 out of 14 cases of the same kind, and conclude pessimistically that "the present widespread use of 'endocrine' products in menstrual disturbances seems to us unwarranted." Excessive uterine loss is attributed to lack of some anterior pituitary factor, or to insufficient pituitary stimulation of the ovary. Ripe Graafian follicles fail to rupture and luteal tissue is absent; the ovary is studded with relatively small follicular cysts; and the endometrium proliferates unduly and bleeds profusely. It is with the object of inducing luteinisation of the ovarian follicles and a progestational type of endometrium that gonadotropic hormones and/or progesterin are administered. Three factors commonly militate against their success. In the first place the patient often presents herself too late; the cases which respond best are those of bleeding at puberty, which are usually pure menorrhagia. Secondly, the doses of gonadotropic extracts at present available may often be too small to achieve their purpose. Finally, the present preparations may not contain the principle which is most effective in controlling uterine hæmorrhage.

MEDICINE AS A USEFUL ART

In a bookseller's catalogue which came by the same post as a copy of the inaugural lecture given by the new professor of medicine in the University of Liverpool, medicine and surgery are classed under the "useful arts," and Prof. COHEN's address gives good grounds for reflection as to how far such a definition is or ought to be true. What in short is the prime concern of a professor of medicine?—a question which is being discussed more and more as the academic equipment of the subject is being expanded in so many places. It is, without doubt and as the regulations of his chair likely enough prescribe, to advance medicine by teaching and research; the two are intimately connected, for nothing but second-rate teaching will be found in an atmosphere where there is

² Clauberg, C.: Deut. med. Woch., 1935, lxi., 1189.

³ Henderson, D. N.: Canad. Med. Assoc. Jour., 1935, xxxii., 617.
⁴ Geist, S. H., and Spielman, F.: Amer. Jour. Obst. and Gyn., 1935, xxix., 518.

no curiosity to know more, and good academic teaching is an almost necessary prelude to worthy research. And to carry out this ideal, the professor's first business must surely be to know about medicine; he must be what is sometimes nowadays esteemed rather lightly, a learned man and a scholar. And this not only for his teaching, for it is as true in medicine as in other disciplines of human interest that a good enough knowledge of what has been said and written already will give the solution of many problems which seem unsolved; we have the data if only we had the wit to put them together. About the necessity for learning there is, we imagine, little difference of sober opinion, and it is as idle as it is fashionable to waste time finding out what is known already; knowledge can be advanced only from a solid foundation, it cannot start in the air. Granting this, what is the professor to do next? Is it to be his chief aim to cure the sick and prevent illness or to study the origins, nature, and course of diseases without taking much count of the practical outcome?

The two roads have many connexions, but they are not the same. A pretty complete knowledge of the natural history of a disease does not necessarily lead to its prevention or cure, nor does the discovery of a cure always wait a knowledge of what is being cured. Irrational therapeutics (such as aspirin for headache) and rational therapeutics (such as insulin for diabetes) may both confer great benefits on the sick and it would be difficult to make a just estimate of which of these

two instances has been of most benefit to mankind, though there is little doubt as to which would be esteemed most highly by a healthy professor. Advances in medicine come from anywhere and almost everywhere, and we should say that the professors should go along any road which happens to appeal to them. To one it may be an abstract study of the chemistry of hæmoglobin, to another it may be a direct search for a cure of the common cold; given knowledge, industry, and brains one is as likely to advance medicine as the other. In the old Italian universities professorships were made life appointments to secure their holders from undue interference by their colleagues of the faculty of theology: equal freedom is needed nowadays and perhaps a little more sympathy between those to whom different paths appeal. There is only one thing which should be common to them all—the problems to which they pay attention must come from the study of sick people even if we agree with Prof. COHEN in thinking that SYDENHAM exaggerated the possibility of always finding the answers in the same way.

Clinical study is and will remain, as Prof. RYLE has reminded us,¹ the primary method of attack on clinical problems if only because the setting of a soluble question is generally half the difficulty in finding an explanation. Several of the dramatic advances of medicine in recent times have come in other ways, but the whole of modern practice is permeated with clinical improvements which are at least as grateful to the patient as the more sensational items.

ANNOTATIONS

CARBON DISULPHIDE AND ITS DANGERS

CARBON disulphide is unjustly known as a very evil-smelling liquid; the fœtor is not its own, but is due to minute quantities of undesirable associates. The B.P.C. remarks mildly: "It should not have a fœtid odour." Its dangers however are of a more tangible kind and not realised as fully as they should be. Those who work much with it in the laboratory have found it highly inflammable; even evaporation over a hot plate, with the burner turned out, will sometimes cause a fire, made more unpleasant by the irritating and poisonous sulphur dioxide formed on combustion. Hot steam pipes or electric bulbs will sometimes cause ignition, for its auto-ignition temperature is between 125° and 135° C. Special precautions are therefore needed when carbon disulphide is used in industrial operations, which it often is owing to its useful solvent properties, and its low boiling-point (46° C.), which enables it to be removed easily from articles on which it has been used. The risk of explosion is high as a mixture containing only 19 volumes in a thousand of air is explosive. But when all possible precautions have been taken against the risk of fire there is still the danger from the high toxicity of the vapour. Slight symptoms are produced after some hours' exposure to concentrations as low as 322 to 386 parts per million in air; the maximum concentration that can be inhaled for an hour without serious disturbance is 483 to 807 parts. Exposure for over half an hour to a concentration of 1150 parts is dangerous. Lower concentrations lead to chronic poisoning. The usual

effects of inhalation of the vapour for some weeks are nausea, indigestion, headache, and giddiness, sometimes accompanied by emotional disturbances which may be frankly hysterical in character. The breath has a characteristic odour, the tongue is pale and flabby, and there is facial pallor. In cases of mild absorption of the vapour, an appearance of anxiety with sweating of the hands and forehead is suggestive; these symptoms indicate a degree of exposure which, if continued, may lead to other effects. The mental disturbance increases and is accompanied by impairment of memory, mental dullness, and depression. The speech may be affected; contraction of the visual fields with diminution of accommodation occurs later. One of the earliest signs of chronic intoxication is muscular weakness due to a toxic neuritis. First to suffer are the facial muscles or the flexor muscles of the forearms, the lower limbs being affected later. Tremor, paresthesia, and loss of sensation are also seen, and, as a later complication, optic neuritis. Ultimately there is difficulty in walking; the patient may become bedridden and even unable to feed himself. Recovery is slow and uncertain; some effects may remain. In acute poisoning the mental disturbance may amount to mania.

Since Dec. 31st, 1924, poisoning by carbon disulphide contracted in a factory or workshop has been compulsorily notifiable to the chief inspector of factories by medical practitioners, and by occupiers to the district inspectors.² Since that date 18 cases have

¹ See THE LANCET, Dec. 7th, 1935, p. 1301.

² Ibid., 1934, i., 1299.

been reported from artificial silk works, viscose paper works, india-rubber works, and works manufacturing the compound. Practitioners who have among their patients chemical students, research workers, or analytical chemists would do well, if they find any of the symptoms which have been described, to make tactful inquiries as to whether the patients have been engaged recently in work involving the use of this compound, either as a solvent or as a participant in chemical reactions studied. The expert readily gets into the way of using well-known chemicals without much consideration of possible toxic effects, and soon becomes inured to the offensive smell which might give a useful warning to the inexperienced; the symptoms resulting from mild exposure may be attributed to ennui, fatigue, or unsuitable food. The liquid being heavier than and not very soluble in water, safe storage can be ensured. Since the vapour is about two and a half times as dense as air, ventilation from the bottom of rooms is effective. Care must be taken that the air-disulphide mixture sucked out by fans is not ignited by electric sparks or other sources of heat.

The dangers of carbon disulphide are described and precautions set out in a memorandum just issued by the factory department of the Home Office (Form 836, November, 1935, 3d.).

A FRIENDLY CRITIC OF OUR HYGIENE

WE do not think or talk of things that are going well, and when the public is vocal about reform of the marriage laws we know at once that something is wrong with the existing arrangements. Our friend who bores us about his digestion has certainly got a bad one. It is, therefore a compliment to English sanitation when Prof. Julius v. Darányi in his "Ausbildung in der Hygiene"¹ says:

"It is interesting that although health education in general is not very much developed in England the high standard of living has, nevertheless, made sanitary arrangements generally indispensable; they appear to be a matter of course, with no necessity for health propaganda being felt. It seems that in countries with a low degree of civilisation the situation is reversed. In them health propaganda is prominent because sanitary arrangements are imperfect."

It is true that we take many of our health services as a matter of course. We seldom speak about them, but they strike the foreign observer with greater force the more such facilities are lacking in his own country. This is probably the reason why Dr. Darányi elsewhere remarks that we do not give sufficient time to the teaching of hygiene in the medical curriculum. We are sixty years behind the German and Hungarian universities and still in the stage when hygiene is not separated from State medicine. But is that really so? There is in this country a definite perception of the difference between environmental sanitation and personal preventive medicine. Under the threat of a cholera invasion we began environmental sanitation about a century ago, blessed by a well-defined natural frontier and by a rapidly developing industrial system. It was easier to keep out infection at the sea coast than at a land frontier, and the industrial boom provided money for costly and slow-fruited environmental methods. We have had our reward. We believe that most of those who have decided to adopt medicine as a career have a sufficient general knowledge of environmental hygiene to make it unnecessary to

engage in its detailed study until the foundations for such study have been laid in a knowledge of physics, chemistry, and bacteriology. In the personal preventive medicine which has rapidly developed in the last quarter of a century it is wiser not to teach people how to prevent a particular disease until they have learnt something about the nature of that disease. But the position of the medical student in training to become a priest of the esoteric mysteries of hygiene is different from that of his lay brother who has to practise only the exoteric ceremonial. It is ultimately on the individual layman that the success of environmental hygiene must depend, and although we may afford to go slowly with the remodelling of the medical curriculum in preventive medicine, the time has come when sound teaching of elementary hygiene should take an increased place in the ordinary school course. Environmental medicine rests ultimately on cleanliness and the proper disposal of waste products; soap and water have much more to do with it than have special diets, dress reform, and such fancies. While the children in our elementary and secondary schools are learning unapplied chemistry and physics, the press is flooded with advertisements of vitamin-containing foods, artificial sunlight lamps and aperients, with ominous descriptions of the evils of blood pressure and intestinal stasis. The school medical officer might now supplement the routine medical examinations, which have enormously benefited the rising generation, with lectures on public health and hygiene as part of the science or domestic economy course at schools. Thus the seeds of wider and sounder knowledge—not of medicine or pathology, but of the principles of hygiene as they may be practised by the simple—would be disseminated; and it has been found in selected communities where the elements of hygiene are taught that the results have been encouraging. Ignorance does not create a state of hygienic bliss.

NATIVE FOODSTUFFS

THE superlative importance of foods is at last coming to be recognised even by the most ascetically minded. Food is the raw material of which man is made, and the recent meeting in London of international experts on nutrition, under the auspices of the League of Nations, showed that at last the governments are realising that it comes within the scope of their responsibility to provide that raw material in sufficient quantity and of adequate quality. The newer knowledge of nutrition has made it possible to sketch human requirements with a fair degree of definiteness. These may differ somewhat for different climates and certainly the exact mode of meeting them will differ according to the food-supplies naturally available in different geographical regions. It behoves all countries, therefore, to examine their native foodstuffs and ascertain which of these can best satisfy the different nutritional requirements of the people, in proximate principles, salts, and vitamins. It is gratifying to see that neither South Africa nor India is unconscious of her duties in this respect. For a good many years the proper nutrition of the native mineworkers on the Rand has been the subject of special study and we now have to hand accounts of two investigations by L. F. Levy and F. W. Fox,¹ of the South African Institute for Medical Research, in which the antiscorbutic value of a number of South

¹ Reprinted from the jubilee volume Orvosképzés. Budapest: University of Hygiene. Pp. 53. 3 pengő.

² South African Med. Jour., 1935, ix., 181; Biochem. Jour., 1935, xxix., 584.

African foodstuffs is worked out by indophenol titration and confirmed in some cases by biological tests. Indophenol titration is admittedly a rough method of estimating vitamin C, being subject to certain well-recognised sources of error, but its use serves to give a general idea of the vitamin-C content of foodstuffs. One material, lucerne, receives special attention, since the leaves were found to have a very high vitamin-C content, about four times that of fresh citrus fruit juice. Lucerne, which is a vetch, is widely used as a food for domestic animals—in South Africa especially for ostriches—but there seems to be no reason why it should not be adapted for human consumption as a salad or spinach, where there would otherwise be a shortage of fresh antiscorbutics. From Calcutta R. K. Chakraborty publishes a similar study,² in which special attention is paid to the antiscorbutic value of milk, human, cow's, goat's and buffalo's, and of foodstuffs of plant origin. Three fruits were found, species of zizyphus, physalis, and citrus, all of which were more potent sources of vitamin C than the best Indian fruits previously known, the Indian lemon and orange. Both the Indian and African studies will no doubt be extended and investigations of the same sort will eventually have to be undertaken in all parts of the world where the less usual foods are eaten.

ELEPHANTIASIS IN BANCROFTIAN FILARIASIS

DURING the last four years Prof. C. K. Drinker and his colleagues have been working on the lymphatic system of the dog. They have produced typical elephantiasis by repeated injections of two sorts given slowly into the lymphatic trunks of the lower limb—namely, a watery suspension of crystalline silica with particles about $1\ \mu$ in diameter, and a solution of quinine hydrochloride with a strength of 2.5 per cent. In the lymph glands the particles of silica get caught up in the endothelial reticulum of the sinuses, and these become filled with large pale cells which later form fibrous tissue; the effect of quinine in bringing about the closure of varicose veins is well known. These repeated injections, made at normal lymph pressures, act upon new collateral channels as they are formed; and the final effect is that, as the result of lymph blockage and transient periods of sterile inflammation produced by purely physical and chemical means, the part becomes typically elephantoid. Further inflammatory attacks are apt to occur in it, just as they do in elephantoid tissue in man; they last normally about 48 hours, and each of them adds to the amount of elephantiasis.

It has been much debated whether attacks of this kind, occurring in elephantiasis due to *Wuchereria bancrofti* infection in man, are caused by the filaria, adult or embryo, or by an added bacterial infection. Drinker has probably explained the different findings, on which these differing opinions are based, by showing that in the first few hours, and in the first few hours only, of such an attack in a dog a hæmolytic streptococcus is present in the œdema fluid from inflamed elephantoid tissue, and that this fluid can be obtained from a dependent leg without prior injection of salt solution. If this pointer is followed it should be possible to settle whether or not these attacks in man are due to bacterial infection seeded on to a suitable soil. That the elephantoid tissue does afford such a soil is seen in the fact that inflammatory attacks could be induced by injecting into it a small fraction of the number of streptococci needed to produce the same effect in a healthy animal. During

these attacks the lymph of the inflamed part has a high protein content, amounting to about half that of the plasma, instead of the normal percentage of about one; and in such a medium, used in vitro, connective tissue cells grow well. Further, when the rupture of dilated lymph vessels has allowed of escape of lymph through the epidermis, the protein content of the œdema fluid becomes low and the dog in question has shown little permanent fibrotic enlargement of the limb. The disadvantage of attempting to reproduce this state of affairs in man are clear, but there may be conditions in which upward drainage is possible. The means of doing so were apparently added to in the case of a woman of 19 with double elephantiasis nostras of the lower limbs. The obstruction was high up in the abdomen and by incising large lymphatic vessels lying on the iliac arteries the lymph was made to run into the retroperitoneal space—with what permanent result could not be stated when the report was published.¹

There is another feature in which these experiments have fallen in with experience in man. In the typical inflammatory outbreaks which have been mentioned the blood has at all times been free of bacteria: but in one dog, evidently as the result of infection by a more virulent strain of streptococcus, a septicæmia developed reminiscent of the grave cases which have been so striking a feature of Bancroftian filariasis in British Guiana. In these various ways the new methods used by the physiological laboratory of the Harvard School of Public Health have given a welcome impetus to the study and explanation of this infection in man.

LE ROY EST MORT!

ANY doctor who has tried to make even a tentative diagnosis solely on the patient's symptoms as described to him by a friend or relative knows how ludicrously he may be led astray. Mr. Yearsley is therefore to be congratulated on his courage in diagnosing the causes of death of the Rulers of England on what, in many cases, is very slender and unreliable testimony.² Perhaps, as may be necessary sometimes in surgery, he has had to learn not only to make up his mind but also to act on insufficient evidence. Be that as it may, and although we cannot unreservedly accept all his diagnoses, it must be admitted that he has written a very interesting little book. The Rulers of England, if Oliver and Richard Cromwell and the luckless Lady Jane Grey are included, number forty from the Norman Conquest to the death of King Edward VII. Of these, no less than eight (20 per cent.) died violent deaths, either in battle or at the hands of the murderer or headsmen, but it is reassuring to loyal subjects to note that the practice of regicide grows less common as time goes on. The acute infections and cardio-vascular-renal disease have each accounted for six; syphilis, congenital or acquired, and "dysentery," which covers a multitude of ignorances, have each disposed of four. "Senile decay," a diagnosis no longer accepted as a certified cause of death, is mentioned in three cases and implied in one other. Stephen may have had an appendix abscess, Edward III. gonorrhœa, and Richard II. anorexia nervosa, but Mr. Yearsley thinks that Henry I.'s "surfeit of lampreys" was more probably ptomaine poisoning. George IV. and William IV., pathologically speaking, had much in common; both had hepatic cirrhosis,

¹ Romans, J., Drinker, C. K., and Field, Madeleine: *Ann. of Surg.*, 1934, c. 512.

² An Account of the Deaths of the Rulers of England. By Macleod Yearsley, F.R.C.S. London: John Heritage, The Unicorn Press. 1935. Pp. 164. 3s. 6d.

² Indian Jour. Med. Research, 1935, xxxiii., 347.

pericarditis and, probably, pneumonia. Those who think harshly of James I. will do well to bear in mind that he had Bright's disease, enlarged tonsils, renal calculi, jaundice, hæmorrhoids, dental caries and pyorrhœa, and arthritis—surely enough to sour any man.

THE WORLD REQUIREMENTS OF NARCOTIC DRUGS

THE Supervisory Body acting under the 1931 Convention for Limitation of Manufacture of Narcotic Drugs has completed its estimate of the world requirements of morphine and its derivatives, and of cocaine, for 1936. The estimates for morphine, heroin, and cocaine "for use as such" are respectively 9799 kg., 930 kg., and 4503 kg. Compared with the estimates for the two previous years these figures represent a substantial reduction of heroin, some decrease of cocaine, and a slight increase of morphine. No less than 34,279 kg. of morphine were however required for "conversion," chiefly for the manufacture of codeine, of which 25,710 kg. are estimated as the world requirement for 1936. The increasing demand for morphine for "conversion" has attracted the attention of the Supervisory Body and is being carefully investigated. For 59 countries and 89 territories the estimates were furnished by the Governments concerned; in 11 countries and 9 territories the Supervisory Board, in default of such returns, had itself to frame them. In tables appended to the report are set out for each narcotic drug the estimated requirements of each country and territory for the year 1936. The compilation of this elaborate return (C. 429. M. 220. 1935. XI.) reflects great credit on the Supervisory Body and the secretariat of the League.

THE COMPOSITION OF "WHITE BILE"

A GROUP of workers engaged on a study of gall-bladder function¹ have been fortunate in obtaining 15 examples of "hydrops" of the gall-bladder from patients in whom the cystic duct was obstructed. In their opinion the sequence of events in these cases is: damage to the biliary system; obstruction of the entrance of bile into the damaged gall-bladder; dilution of the gall-bladder contents; and finally decoloration of the bile by absorption or destruction of the pigment. Whether acute infection plays a part they have not decided. The colourless contents of the gall-bladder are secreted by its damaged mucosal cells, bile salts and bile-pigment being absent. In this white bile chlorides and calcium are found at approximately serum level though sometimes (in 5 of the 15 cases) the calcium content is considerably higher. The amount of cholesterol varies: in 9 cases it was either absent or present in proportions under 9 mg. per 100 c.cm., while in the other 6 the figures ranged from 15 to 143 mg. per 100 c.cm., the higher cholesterol figures being usually associated with a higher calcium content. There is as yet no obvious explanation for these facts. In 2 cases in which the gall-bladder was drained, daily observations were made of the composition of the fluid obtained. Bile salts did not reappear within the period of study, presumably because the cystic duct remained blocked. The chlorides remained at the usual level of 90–120 milli-equivalents per litre. The calcium figures were very constant; in one case they showed a slight gradual decrease, but they were always approximately at serum level.

¹ Ricgel, C., Raydin, I. S., Johnston, C. G., and Morrison, P. J.: *Amer. Jour. Med. Sci.*, November, 1935, p. 653.

The cholesterol content was much higher in one case than in the other. It is hoped by these investigations of the isolated gall-bladder and ducts to get information about the functions of these structures. Unfortunately, in the human subject their isolation is often due to a preliminary inflammatory process which somewhat vitiates the experiment.

THE MARCH OF MEDICINE

THE turn of the year is the traditional time for reviewing the year's events and achievements. The few days that come after the festivities of Christmas and before the New Year's invitation to good resolutions, should be made to yield an hour or two for detached retrospection, not sentimental, but rather a little critical. Those who have, or aspire to have, a hand in the advancement of medicine, whether by making discoveries, by proclaiming them to the world, or by applying them for the benefit of the sick, may well take the Year Book of General Medicine¹ as the basis for their retrospective meditation. The 1935 volume actually deals with work published between mid-1934 and mid-1935, and can therefore be in our hands before Christmas. It is edited by six physicians of great eminence, who have chosen for abstraction the most valuable papers in their several fields, and have often added for the reader's great benefit their own brief comments. In the period they cover there has been no single discovery of startling importance, but the march of medicine on many fronts has been steady and progressive. The impetus given to hæmatology by Minot and Castle has not spent itself, but is spreading rather to adjacent subjects; in their section of the book they call special attention to a report of the production in pigs, through a vitamin-deficient diet, of changes in the oral and gastric mucous membranes, achlorhydria, diarrhoea, muscular weakness, and macrocytic anæmia—a picture so like that of pernicious anæmia that it may be a clue to the causation of that disease and perhaps also of some of the chronic "gastric" conditions towards which a great deal of interest has lately been directed. In the gastrointestinal section there are several important papers on chronic gastritis, which is now satisfactorily defined in terms of structural changes in the gastric mucosa, although its relation to functional changes and to symptoms, as well as its pathogenesis, remain obscure. Meulengracht's localisation of the source of the intrinsic (gastric) factor of the anti-pernicious anæmia principle is another notable advance in this field; medicine is undoubtedly marching, in Napoleonic fashion, on its stomach.

Three other sections, on cardiovascular disease, on lung disease, and on infections, complete the book, for "General Medicine" is defined by exclusion, and endocrinology, neurology, psychiatry, and therapeutics find their places in others of the Year Book series. In cardiology, many writers seem to be re-working old ground, often with greater care and more precision than heretofore; the bold attempt to ameliorate cardiac failure and severe angina by total thyroidectomy is being continued, and "this rather radical procedure still seems definitely indicated in a number of carefully selected cases." Among the infectious diseases, the virus investigators are working quietly ahead. In the chest section, the

¹ The 1935 Year Book of General Medicine. Edited by George F. Dick, M.D., Lawrason Brown, M.D., George R. Minot, M.D., S.D., F.R.C.P. (Hon.) Edin., William B. Castle, M.D., A.M., William D. Stroud, M.D., and George B. Eastman, M.D. Chicago: The Year Book Publishers, Inc. Pp. 848. 12s. 6d.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXXII.—PROGNOSIS IN TUBERCULOUS INFECTIONS OF THE SKIN

Of the tuberculous diseases those affecting the skin are, for a variety of reasons, among the most interesting and complex. Their development and course can be observed by the unaided eye, and their accessibility affords wide scope for therapeutic measures, which are moreover easier to control and adjust than those designed to cure organs or tissues within the body.

With a single exception—the primary tuberculous chancre—every form of cutaneous tuberculosis is associated with a similar infection of the lungs, glands, bones, or internal organs, and it is essential to make a careful search for a primary focus as soon as the nature of the skin lesion has been established. Neglect to do this, besides affecting the prognosis, may lead to disaster. I have twice seen hæmoptysis—the first recorded in the patient's history—follow within a week the application of general carbon arc baths in the treatment of lupus verrucosus, and it is not without significance that, as is well known, Dr. Rollier will not accept at Leysin cases of bone or joint tuberculosis complicated by active pulmonary tuberculosis. This interplay of cutaneous and visceral tuberculosis, which involves the vital factor of the degree of immunity, is undoubtedly the chief consideration in achieving anything like a correct prognosis, as far as the skin lesion is concerned. A detailed discussion of all that is here implied by the term immunity is beyond the scope of this article, but for the proper comprehension of the factors on which the course and prognosis of any given tuberculous infection of the skin can be estimated, some consideration of it is essential. Immunity may be regarded from two points of view, as far as the skin is concerned: (a) the type and virulence of the infecting organism, and (b) the reactions of the individual as a whole, and the infected tissue in particular, to the invading bacillus. Prognosis is thus a highly complex problem, depending, first, on the three variables indicated in (a) and (b), and secondly on the patient's environment, the standard of treatment available for him, and his ability to attend regularly for its controlled application.

Lupus Vulgaris and Lupus Verrucosus

Lupus vulgaris is by far the commonest as well as the most disfiguring and disabling form of cutaneous tuberculosis. It varies very greatly in its virulence and response to treatment, and the prognosis must vary accordingly. It would be greatly improved if all the patients affected could be admitted as in-patients to an establishment equipped (as few are) with a highly trained staff and all the modern technical apparatus required. At the Finsen Institute at Copenhagen S. Lomholt (1934) claims to achieve a cure in 80 per cent. of cases. It is probable that this figure could not be approached under existing conditions in this or any other country at the present time, and in most out-patient clinics 50 per cent. of cures would be regarded as an enviable result. The gloomy outlook could of course be improved if diagnosis and correct treatment were established at an early stage. It is possible and may be advisable to excise the early patch of lupus, and most of the cases in which this is done efficiently do not relapse. On the other hand, it is difficult even to alleviate

the condition when once the mutilating and destructive process has involved the nose and ears, and perhaps the cheeks, lips, and eyelids as well. Lomholt emphasises the importance of attacking all lesions at once and over the greatest possible area, with rapidly ensuing courses of Finsen and carbon arc light. Every authority will agree with this assertion and also with his view that X ray therapy should be entirely abandoned in lupus treatment partly because of the risk of subsequent "X ray" carcinoma, and because skin so treated loses its vitality in some degree and fails to respond subsequently in the normal way to ultra-violet rays whether natural as from the sun, or artificially produced as in the Finsen lamp. The age of the patient is another if less important factor in prognosis. Lupus seldom begins after the age of 35 or 40, and when it appears then is relatively benign and easier to eradicate. Over 80 per cent. of its victims are attacked before the twentieth year, and such young persons not infrequently suffer from associated tuberculous disease of the glands, joints, or bones, although pulmonary tuberculosis is rarely present. It has already been emphasised that with one rare exception, all T.B. of the skin is associated with latent or active infection elsewhere, and with this fact in mind every effort should be made to improve the general resistance by appropriate diet (Hermannsdorfer-Gerson salt-free diet and cooking), and by a change, where this is possible, to a dry and sunny climate. By far the best for this purpose, judging by results, is that of the high Alps, where the most inveterate forms of cutaneous lupus and other tuberculous infections usually respond within the year to the unaided effects of solar light.

Two severe cases of facial lupus in hospital patients sent by me some five years ago returned after 14 and 11 months with perfectly healed soft cicatrices, and have not subsequently relapsed. Both patients attend regularly for supervision, but are able to follow their ordinary vocations—the man as an optical lens grinder, the woman as a housekeeper. No other method of treatment known to me can be relied upon to offer such good chances for the future, and it is my confident opinion that the permanence of the cure results from the treatment of the patient rather than of his lesion, for this is actually protected from the direct rays of the sun during the daily exposures of the rest of the body. A third case of facial lupus—a young man whose early patch on the cheek had relapsed after surgical removal in childhood, and had then failed to respond to repeated X ray treatment—was not so fortunate, and Dr. Rollier wrote explaining that the skin had been too seriously devitalised by X rays to give the usual response in the area affected.

Previous treatment by X rays is thus a factor to be considered seriously in estimating prognosis as far as lupus is concerned. Authoritative opinion is gathering strength against its use both in lupus vulgaris and lupus verrucosus, in which the temptation to apply it is greater because of the warty character of the tuberculous infiltrations. This feature tends to chronicity, and while doubtless it is part of a defence mechanism, it renders even more difficult the extirpation of the invading bacilli, which must be the ultimate aim of every therapeutic measure. Prognosis therefore in a case of the verrucose variety of the disease must be guarded in the extreme, for relapses after apparent cure are the rule rather than the exception.

In estimating the future in these two varieties of

SPECIAL ARTICLES

AN IMPROVED TECHNIQUE FOR
ADMINISTERING INTRAVENOUS
SOLUTIONS AND FOR BLOOD
TRANSFUSION

By J. E. MCCARTNEY, M.D., D.Sc.

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THE use of various solutions for intravenous injection has much increased of recent years. The value of saline solution in shock, gum anæmia in hæmorrhage, and glucose in toxic exhaustive conditions is being more and more recognised.

In emergencies it is necessary to have a supply of reliable material ready to hand, which can be administered intravenously with little or no trouble in preparation. The following method has been introduced for use in the London County Council hospital service. The advantages are that adequate supplies of material can be kept always available and that the administration of intravenous solutions is considerably simplified and free from contamination.

Supply of Intravenous Solutions

The central supply and distribution of material for intravenous use for the Council's hospitals is undertaken at the Southern Group Laboratory, employing the "canned media" principle already introduced and developed for culture media.¹ All solutions are put up in white flint screw-capped bottles. The cap, furnished with a rubber washer, is tightly screwed on, and the bottles containing the fluid are autoclaved. In this way the solution is "canned." As the bottle is hermetically sealed the fluid cannot evaporate, neither can it become contaminated. In order to ensure that the bottle has not previously been opened the top is covered by a Viskap, while identification of the contents is ensured by coloured beads, labels, and caps. Even when the cap is removed and the labels have become detached through immersion in warm water, the beads still act as an indicator of the contents.

The various fluids available are: normal saline; Ringer solution; glucose (in saline or Ringer solution) in strengths of 5, 10, 25, and 50 per cent.; sodium citrate 3.8 per cent.; gum anæmia 6 per cent. in saline; and distilled water. The last is used for making hypodermic solutions and for dissolving arsenamine, &c.

CONTAINERS

In order to avoid a multiplicity of containers, the following screw-capped bottles are standardised * :—

10 oz. round Winchester series, holding 1000 c.cm.	A
20 oz. " " " " " " " " " " " "	500 c.cm.
12 oz. medical flats, holding 250 c.cm.	
6 oz. " " " " " " " " " " " "	100 c.cm.
4 oz. " " " " " " " " " " " "	60 c.cm.
10 c.cm. ampoules.	

* These have same size of cap.

The bottles are received from the makers already washed and clean. They are immersed in distilled water and then autoclaved with the distilled water

in them, which effectively sterilises them and removes alkalinity from the glass.

The fluid is made up in batches of 4 litres or multiples thereof, and filtered through a glass filter into the containers. The appropriate coloured beads are added to the bottles. The caps are screwed on tightly, and the bottles are autoclaved at 15 lb. pressure for twenty minutes. They are removed from the autoclave and when cooled the viskaps are put on. When dry the viskaps are painted the appropriate colour (with cellulose paint) and the labels attached to the bottle. Ampoules are made of B.P. neutral glass and are the same as used for the Council's diphtheria and scarlet fever antitoxin. With ampoules, beads are not practicable; instead, after sterilisation the ampoules are painted on the bottom with cellulose paint.

The colour scheme used for beads and labels is as follows:—

Saline	Dark blue.	Sodium citrate	Red.
Ringer	Black.	plus another bead to indicate strength, thus:	
Glucose	Green.	Red and white	3.8%
plus another colour to indicate strength, thus:		Red and red	20%
Green and white	5%	(2 red beads)	
Green and brown	10%	Gum saline	Brown.
Green and yellow	25%	Distilled water	White.
Green and green	50%		
(2 green beads)			

When any of the above solutions are made with Ringer solution, an additional black bead is added, and a black ring is painted round the viskap. Those made with normal saline have a blue bead.

The 50 per cent. glucose in 60 c.cm. amounts is used in diphtheria and other acute toxic conditions, while the 5 per cent. solution of glucose in Ringer solution is an improved substitute for saline.

Administration of Fluids

The following method of administering fluid direct from the bottle simplifies the procedure and avoids contamination. Screw-capped bottles have previously been adapted for filtering,² or the collection of blood for adult measles serum,³ and the same method has been extended to intravenous injections. The method is readily understood by reference to Fig. 1.

APPARATUS REQUIRED

- Intravenous solution in screw-capped bottle.
- Metal screw-fitting for bottle, brass, chromium plated.
- Metal carrier to hold bottle, brass wire, tinned.
- Three pieces of rubber tubing of 5 mm. bore: (1) To reach to bottom of bottle (p). This should be tied with figure silk to the metal fitting at (n) and the free end should be notched as sketch. (2) Small piece (r) 2 in. long, attached to the side-arm (c). (3) A long piece (s) attached to the bent arm of the fitting (at A) furnished with a bubble trap (u), a clamp (j), and an adaptor (k) for the needle.

(e) Sterile air filter (a). This consists of a piece of 5 mm. glass tubing containing cotton-wool and drawn to a point at each end.

(f) Ampoule file.

(g) Rubber blow-ball.

Three sizes of metal fittings are used, viz. :—

Large size	} to fit bottles holding	500 c.cm. and 1000 c.cm.
Medium size		250 c.cm.
Small size		50 c.cm. and 100 c.cm.

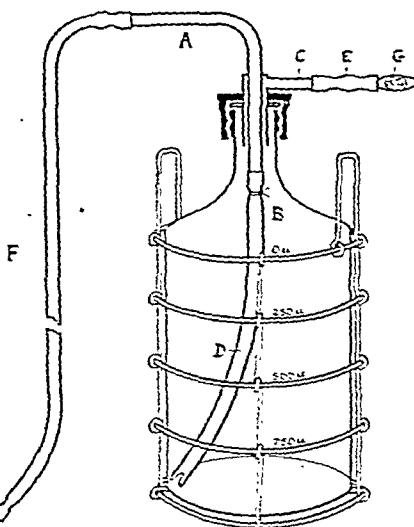
These amounts are stamped on the fitting. The metal carriers for the bottles are designed so that the rings indicate the amount of fluid taken from the bottle. The amounts are stamped on the carriers.

* These are manufactured by the United Glass Bottle Manufacturers, Ltd., 10, Norfolk-street, London, W.C.2.

METHOD

Place the bottle of intravenous fluid in the appropriate holder, and immerse in warm water. The metal fitting, with rubber tubing, bubble trap, clamp, and adaptor properly attached, is sterilised by boiling, or may be wrapped in Kraft paper and sterilised in the autoclave. Remove the viskap, unscrew the cap from the bottle, insert the rubber tube (D), and screw on the metal fitting. File and break off the pointed ends of the air filter (G), and insert one end into the rubber tubing (E). Attach the blow-ball to the free end of the air filter (G). Hold the tube (F)

FIG. 1



Apparatus for administering fluids intravenously.

vertical, release the clamp (J), blow air into the bottle until fluid issues from the adaptor (K), close the clamp, lower the tube (F), and remove the blow-ball.

The fluid is now ready for administration, and during the injection siphons over from the bottle. The carrier may be suspended by hooks to a pulley arrangement so that the height can be varied, or it may be hung on a hook on the wall. The pressure of fluid depends on the height of the bottle above the patient. Alternatively, the bottle may be kept at the bedside and the necessary pressure obtained from the blow-ball, which in this case is not detached from the air filter.

Blood Transfusion

The blood is withdrawn by suction into a screw-capped bottle containing sodium citrate solution to prevent clotting. When the required amount of blood has been obtained it is administered intravenously as above described.

APPARATUS FOR WITHDRAWING BLOOD

(a) 40 oz. round screw-capped. Winchester series bottle containing 75 c.cm. of 3.8 per cent. sodium citrate in Ringer solution, prepared and sterilised as the intravenous solutions previously mentioned.

(b) Screw-cap fitting as for intravenous injection, but fitted as Fig. 2. To the bent arm is attached a short piece of rubber tubing (B) fitted with an adaptor and wide bore needle. This type of apparatus has been used with success in withdrawing blood for adult measles serum.³

(c) Gauge (M) for estimating amount of blood consisting of a flat piece of brass, chromium plated, 6 in. long, $\frac{1}{4}$ in. wide, and $\frac{1}{16}$ th in. thick, marked to indicate 100 c.cm. amounts in the bottle.

(d) Air filter (G).

(e) Piece of rubber tubing (F), 18 in. long, with glass mouth-piece.

(f) Two rubber bands (R) $\frac{1}{2}$ in. wide.

APPARATUS FOR ADMINISTERING BLOOD

(a) Screw-cap fitted as in Fig. 1.

(b) Sterile air filter.

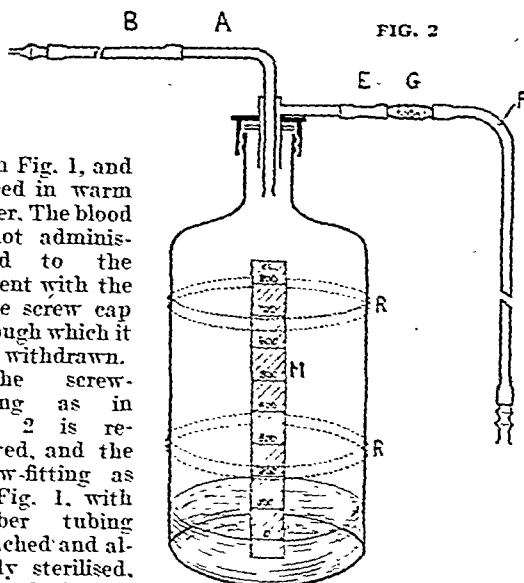
METHOD

The rubber tubing (B), Fig. 2, adaptor, and needle are lined with liquid paraffin, and attached to the bent arm (A) of the screw-fitting. The short piece of rubber tubing (E) is attached to the side-arm. These are then wrapped in kraft paper and autoclaved.

When blood is to be withdrawn, the bottle and contents are warmed, and the gauge (M) fixed to the bottle with the rubber bands (R) so that the zero mark is level with the surface of the citrate solution. The cap of the bottle is now removed and the screw-fitting applied. The tips of the air filter are filed and broken off. One end is inserted into the tube (E) and the other into the long tubing (F) (Fig. 2) carrying a mouth-piece.

The needle is inserted into the vein of the donor, and gentle suction applied to the mouth-piece with the mouth. Blood is seen pouring from the lower part of tube (A) into the bottle and its rate of flow observed. While the blood is pouring in, the bottle is gently rotated to mix the contents, while the actual amount obtained is read directly on the gauge. When enough blood has been obtained, and the needle withdrawn, the gauge and rubber bands are removed, the bottle is fitted into the wire carrier

FIG. 2



Apparatus for obtaining blood for blood transfusion.

as in Fig. 1, and placed in warm water. The blood is not administered to the patient with the same screw cap through which it was withdrawn.

The screw-fitting as in Fig. 2 is removed, and the screw-fitting as in Fig. 1, with rubber tubing attached and already sterilised, is substituted. The blood is administered to the patient as though it were the intravenous solutions previously described.

The above methods have been extensively used in the London County Council's hospitals during the past year, and their usefulness and convenience amply demonstrated.

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2. An Introduction to Practical Bacteriology. By T. J. Mackie and J. E. McCartney. 4th ed. Edinburgh, 1934, pp. 38, 484.
3. London County Council. Report of the Medical Officer of Health on the Measles Epidemic, 1931-32, p. 35; Fig. 2, p. 40.

PLAGUE IN AFRICA

Nor the least valuable of the activities which the Office International d'Hygiène publique maintains is that of publishing at suitable intervals reviews of the epidemiological history and present position of the great plagues which afflict mankind—cholera, yellow fever, pandemic influenza, and the plague of plagues, the Black Death or *pestis major*. During the years 1924-27 the Office collected and, in 1928, it published, in a volume supplementary to its *Bulletin*, the information it had collected on rodents and fleas as the harbourers and transmitters of plague. The volume was prefaced by a general review by Prof. Ricardo Jorge, the Portuguese delegate to the Office and the greatest living authority on historical loimology.

In 1932, at the Capetown conference presided over by Sir George Buchanan, president of the Office, it was decided that an inquiry should be made on plague in Africa, its peculiarities as to spread, its tendencies to increase or diminish, the part played by animal carriers, and the prophylactic measures against it. Now there has appeared a general report, again by Prof. Jorge,¹ dealing with the material collected.

ROUTES OF INFECTION

In his first chapter he sketches the last flickerings of the ancient "Mediterranean" plague which had lasted for untold centuries and given rise at frequent intervals to epidemic waves, spreading from the Mediterranean basin north, east, and west, with consequences writ large in European history. He notes that, in contrast, its extension south was never great. Egypt, Tunisia, Algeria, and Morocco shared with European countries successive outbreaks throughout the centuries while the rest of Africa remained free, though from the fifteenth century onwards plague-infected ships were sailing round the Cape and calling at the ports of both eastern and western coasts. By the end of the seventeenth century plague in Europe was dwindling; it may be said to have ended with the epidemics in Marseilles (1720) and in Messina (1743). In North Africa it lingered for another hundred years: Egypt, especially, suffered from frequent outbreaks, with as many as 200,000 deaths, for example, in 1835, and not until 1844 was Egyptian plague completely at an end. Morocco (1818), Tunisia (1822), and Algeria (1822) became free a little sooner. For the fifty-five years from 1844 to 1899 North Africa was free from epidemic plague. In Uganda, Kenya, and Tanganyika plague was undoubtedly endemic, though not epidemic, in the last quarter of the nineteenth century and was observed by Robert Koch himself during his visit to German East Africa in 1897. Jorge regards this East African plague as possibly the last remnant of the ancient "Mediterranean *pestis*," and thinks that there was a brief interval, from 1899 to 1902, during which East Africa was free, to be invaded once more by the "contemporary pandemic" which took origin in China. An alternative view of great interest, learnedly maintained by Dr. Isgaer Roberts,² is that the eastern portion of Central Africa is one of the natural homes of plague, that this endemic was carried during all the ages by negro slave traffic across the Red Sea to Asia and thence to Europe, and that no importation hypothesis is required for

its twentieth century prevalence in Uganda and the surrounding territories. There is, in any case, no doubt that in 1899-1900 Africa was again invaded from north, south, east, and west by the great contemporary pandemic; Alexandria, Philippeville (Algeria), Mombasa, Mozambique, Capetown, Grand Bassam (Ivory Coast), Senegal, and Lagos all acted as ports of entry in turn, though the precise dates cannot always be established, and the actual source of introduction of the infection is accordingly in doubt. For each of these ports and the adjacent territory Prof. Jorge gives detailed statistics and a graphic account of the incidence of plague during the present century. It is probable, however, that for Egypt and eastern ports the origin was Asiatic, for the Cape it was almost certainly South American (Argentina and Paraguay), while for Algeria and Tunisia sea-borne traffic through Marseilles may be suspected.

Often this sea-borne infection has displayed low powers of penetration. Cases of plague occurred from time to time in the ports and the disease survived as an *enzoötic* among the local rats without spread to the hinterland. There are, on the other hand, some striking exceptions in which the incidence of plague in the ports has remained low but the disease has become established in the interior served by them. This "sylvatic plague" has developed in Morocco, in Upper Egypt, in Uganda, Kenya, and Tanganyika, and, especially, in the Union of South Africa. In South Africa the ports have been free from plague for the last twenty years, but the back-country veld is a typical example of sylvatic plague, characterised by its *enzoötic* existence among the wild rodents. This sylvatic plague and, in fact, plague throughout Africa, except in Uganda and its neighbours, has in recent years had a very low incidence on the human population. It is indeed very remarkable that the same disease that in Asia has slain its millions since the century began should spare, as it has, the African native. For it seems fairly clear that, taking Africa as a whole, plague is disappearing, partly as the result of prophylactic sanitation in the ports and partly by spontaneous regression, the mechanism of which can be the subject only of speculation.

ANIMAL VECTORS

The second half of the review dealing mainly with the animal vectors—rodents and their fleas—is full of epidemiological interest but cannot be summarised, since each area differs in the prevailing species of its rodents and in the habits of its human population in respect of contact with them. The cycle rodent-flea-man has proof after proof heaped upon it in the course of Prof. Jorge's survey, though the cycle man-flea-man is not neglected, since it is in Africa, more than anywhere else, that this type of conveyance is most convincingly displayed (Morocco, Algeria, and Tunis). Among the many curious observations on the dependence of plague on animal hosts, one of the reasons put forward for the remarkable modern immunity of Cairo may be selected as an example. Though rats, both grey and brown, persist in the city (harbouring plentiful *Xenopsylla cheopsis*, the plague flea par excellence), yet they are never numerous, being kept down by the African weasel (*Mustela africana*) which flourishes in the native quarter and prevents the rat aggregation necessary for a plague epizootic to occur.

The last two chapters deal with clinical varieties of human plague in Africa, with the relation of these to climatic and racial differences and finally with the

¹ Suppl. to Bull. mens. de l'Office Internat. d'Hyg. publ., 1935, xxvii., 67.

² East Africa Med. Jour., 1935, xi., 200.

defensive measures now in force. On all these interesting observations are offered, some illustrating the laws which plague obeys in Africa as elsewhere, while others, not the least instructive, are peculiar to the African scene.

PUBLIC MEDICAL SERVICES

A REPRESENTATIVE CONFERENCE

A CONFERENCE of representatives of public medical services was held at B.M.A. House on Dec. 19th in pursuance of a resolution passed by the annual representative meeting last July. Dr. E. KATE LE FLEMING occupied the chair.

The primary bases of the conference were: (1) the B.M.A. model scheme for a public medical service; (2) an explanatory memorandum on the scheme; (3) a confidential report on the work and conditions of existing services. Their reception was followed by a statement from Dr. G. C. ANDERSON (medical secretary, B.M.A.), who hoped that the conference would be an annual affair. He outlined the history of the public medical services, mentioning the spread of the idea after the war, beginning with Essex. He said that adequate medical attention for the poorer and working classes involved some form of insurance. There was a tendency throughout the country for contract schemes to start afresh, and to start in a manner detrimental to the profession. The way to stop that was to start in the area a public medical service based on the B.M.A. model. The trouble was apathy; the doctors failed to see the writing on the wall. Probably the income limit would have to be raised before long; and ultimately consultant and specialist benefit would have to be included. Transfer of benefits between schemes should be arranged. The wage-earner was accustomed to make a weekly budget; why should he not be able to include in it provision for medical attendance on his dependants? There was nothing degrading in contract practice, and if the B.M.A. did not arrange it, someone else would.

Dr. ALFRED COX, representing the London Public Medical Service, read a paper on public medical services and

Encroachments on Private Practice

The P.M.S. idea, he said, meant something far more constructive than a mechanism for collecting money. A doctor's bill might be a very real terror in the working-class home, and the wage-earner might be forgiven if he hesitated to call in the doctor and put up with a medical service far below the ideal. The object of a P.M.S. was to provide for such people a family doctor and medical service which fulfilled modern ideas of what was desirable. Most of the encroachments on private practice of which complaints were made were due to the desire of the local authority to give medical services which the family doctor was not providing. Once established, however, clinics—like hospital out-patient departments—were abused. In areas where there was no P.M.S. the profession could never give a valid answer to these encroachments. The public must be convinced that the doctors were willing and able to do the work, and local authorities must be shown that much public money could be saved. At present no P.M.S. could claim to do the work done by the authorities as well as it was now being done, but the difficulties were not insuperable. The first necessity was a well-organised and popular service providing all the benefits through

some or other of its members. There must be one family doctor responsible; there was no logical defence for the present system whereby a municipal doctor took charge for a brief period of the patient's life and then disappeared altogether. Continuity was the trump card of the family doctor. Everyone admitted its desirability in theory. Much leeway had to be made up. The individual practitioner could never compete with the organised Government service, but a P.M.S. could do so. It was no use simply grumbling about encroachments; the profession must show that it had learned its lesson. The doctors must be proud of their contract and make it better even than private practice.

Dr. A. MCCARTHY (Birmingham) pointed out that an established P.M.S. could demand representation on all public bodies, and then could nip future encroachments in the bud. Legally, a P.M.S. must be regarded as a collecting agency if the expense and complication of forming a company were to be avoided, but that did not prevent the members from remembering and following their ideal.

Dr. COX reiterated his view that so long as the profession regarded a P.M.S. as a means of collecting money it would do nothing to prevent encroachments, but would rather have to meet further encroachments.

Dr. S. WAND (Birmingham) spoke on the

Necessity for Publicity or Advertisement

For the first time, he said, the B.M.A. had laid the word "advertisement" before the profession without explanation, qualification, or apology, and that was very important. The objects of publicity were to bring to the notice of everybody—employers and employees—the value of the P.M.S. and to make the public trust it. To get at those who did not attend doctors' surgeries Birmingham had an "all or none" rule insisting that families must join and leave en bloc and never as individual members. An energetic subcommittee was the first requirement. The doctors were made keen by showing them the objects of the P.M.S. and by encouraging social intercourse and mutual trust. Recruiting letters could be sent out with the cheques. Birmingham had devised the slogan that every member should aim at getting one new unit a day. The most important item of all in advertisement was the service rendered by the doctor; doctors could also help by giving out leaflets, displaying notices, and explaining to patients. Another valuable slogan was: "Get at the women!" It was the wife who usually had to pay the doctor's bill. Newspapers could be interested in several ways; interviews were worth far more than entries in the advertisement columns. A notice thrown on the screen at the local cinema had proved valuable in backward areas. Slips could be put in panel medical cards, and leaflets distributed in hospitals, clinics, factory social services, and local health committees. Small booklets had proved of great value in Birmingham. Withdrawals were being followed up and analysed, but were not regarded as very serious. Four axioms for publicity were:—

(1) Lay publicity must not be expected to produce rapid increases but had great value in educating the public and preparing them for the attack of the doctor himself. This was predisposing publicity.

(2) Exciting publicity was the doctor himself.

(3) Results did not just happen; they were only achieved by hard work.

(4) Get at the women.

Dr. JOHN YOUNG (Edinburgh) asked if the hospitals had given any undertaking not to take casual out-

patients. Other members asked questions bearing on the acceptability of the advertising methods outlined.—Dr. R. S. MARSHALL and Dr. J. WELLS (Wolverhampton) stressed the importance of the service rendered and the difficulties produced by half-hearted members. Dr. Wells suggested a panel of doctors to teach girls home nursing, so that the services of a nurse might be available to members of the P.M.S.—Dr. A. N. MATHIAS said that London had tried all ways of advertising and had concluded that the only worth-while method was to satisfy the patient.—Dr. G. IRVING said that that was the only method used by Stockton, which had done very well. Birmingham had 32,000 units and the much smaller Stockton had 6265.—Dr. E. LEWIS LILLEY described a successful collaboration with nurses in Leicester.—Dr. C. H. PANTING (Leytonstone) said that Essex never had advertised and did not intend to. The first essential, said Dr. A. K. GIBSON, was a first-class service.

Dr. WAND, in reply, agreed that the important publicity was the doctor, through the services he gave. Lay publicity was only used for a certain type of patient who did not at present attend a doctor's surgery—possibly because of the counter-attractions of free clinics. The total cost of publicity in Birmingham had been less than £110.

Dr. PANTING opened the afternoon session with a paper on

The Business Aspects

of public medical services. The new service, he said, was going to be a business. Policy would be considered with less anxiety. Instead of taking up much time with its discussion, a scheme should be adopted which had proved workable and only amended if local conditions definitely demanded it. In Essex great savings had been effected, especially in stationery, by the collection of sufficient capital. The committee had borrowed £220 from the doctors and £400 from the National Defence Trust, and this had all been repaid in six years. It was prudent not to rely on any profits during the first two years. The office could not be run on a 5 per cent. basis. Many services were handicapped at the start by not appointing a capable whole-time secretary. Collecting was skilled work and the collector must, besides being honest, be resourceful and tactful. Past members of friendly society staffs were perhaps the best. Salary should increase with the amount of work done, with no limit. To retain subscribers it was necessary to curb the activities of doctors who accepted patients without fully explaining to them the implications of the scheme. No arrears should be tolerated, and then the service would be held in respect. Other factors in efficient working were the provision and arrangement of doctors' and collectors' ledgers, the method of recording names and details of every book in use, and that of presenting doctors every quarter with lists of their subscribers.

Dr. W. DABBS (Coventry) explained details of the scheme which had been administered in his district for 40 years.—Dr. MCCARTHY said that men were better whole-time and women better part-time collectors.—Dr. COX advised that collectors should treat trivial complaints by tact, but make the patient submit serious complaints in writing to the committee.—Dr. LILLEY (Leicester) said that fees must vary with the economics of the area. Services which provided dispensaries, grants, and special benefits must change correspondingly more.—Dr. S. A. FORBES (Croydon) described a local scheme whereby chemists did the collecting, getting a 2½ per cent.

commission, and Dr. J. J. DAY said that Kent had a similar arrangement.—Dr. JOHN STEVENSON (Ayr) said that their clerk was paid on a 5 per cent. basis and was not dissatisfied.

Resolutions

The rest of the day was occupied by a number of motions sent up by various districts. Dr. Alfred Cox was unanimously elected chairman of next year's conference and then took the chair.

Essex asked the Association to issue a pamphlet dealing with the business side of public medical services, but Dr. ANDERSON thought it was too soon for a stereotyped pamphlet and persuaded Dr. PANTING to withdraw his motion.

Stockton (through Dr. G. IRVING) asked the B.M.A. to prepare scales of minimum rates so that the capitation fee should be kept up to a minimum level.—Dr. A. K. TOWERS supported Stockton's motion, withdrawing a similar one by Wallsend. In the distressed Tyneside area, he said, rates based on 6d. a week for the first adult were being paid. Such a rate should, he thought, be standardised all over the country.—Several members felt that the time was not ripe for standardisation and that at present areas must fix their own rates under some kind of control from the central office; they also feared lest a standard minimum rate should become a maximum.—Dr. GIBSON argued that the bulk of the working population was able to pay for what it wanted and it was no part of the policy of depressed areas to make depressed doctors in them. He supported the Stockton resolution, but Dr. WAND, for the same reasons, opposed it.—Dr. C. HILL (deputy medical secretary, B.M.A.) pointed out that the capitation fee did not bear a direct relation to the subscription. A high weekly rate might mean a low remuneration because it did not attract enough members. After further discussion, evidencing some fear that any fixed rate might in the future be held up against the profession, the motion was lost by a large majority.

Dr. J. L. O'FLYN (for Barry) then suggested a reduced rate for the unemployed.—Dr. F. W. GRANT (Jarrow) said that 70 per cent. of his patients were unemployed and he knew of no demand for lower rates.—Dr. W. A. KERR (Swansea) said that temporary unemployment made the position difficult.—Dr. H. F. WATTSFORD (Newcastle) characterised the motion as dangerous and unnecessary. After further opposition on the same lines, the motion was lost by a very large majority.

Barry also wished to raise the income limit to £300, but Dr. WAND pointed out that this had been passed—as a local option—by the representative body and the motion was withdrawn.

Dr. TOWERS proposed for Wallsend that the following additions be made to the list of benefits not included in a P.M.S. in the Association's scheme:—

Miscarriages, inoculations, treatment by injection, specialist treatments (oculist and aurist).

Cod-liver oil, linseed meal, serum (unless supplied by the public authority), insulin and other medicaments used for injection, oxygen, vaccines, and bacteriological examinations.

After the argument had swayed in both directions Dr. ANDERSON pointed out that the B.M.A. scheme was only a model, subject to local option, and deprecated the inclusion of a long list of specific exceptions.—Prof. R. M. F. PICKEN secured the approval of the meeting when he said that the resolution required a great deal more thought, and a small majority voted against it.

Later the meeting considered three motions by London:—

That the conference is of opinion that there should be some mutual arrangement amongst public medical services for dealing with subscribers to services who are temporarily resident in areas other than the one in which they are subscribers.

That the machinery of the B.M.A. ought to be used, in those areas where approved public medical services are operating, in order to minimise the offer by municipal and voluntary authorities of medical services which the general practitioner can render, and which it is the object of public medical services to make available.

That in the opinion of the conference there should be a public medical service committee of the B.M.A. fully representative of public medical services, on lines analogous to those of the Insurance Acts Committee.

The first of these was left to the future committee to consider; the second was passed; and the third was left as a recommendation to council.

Finally, it was decided that conferences of this kind should be held annually.

MEDICINE AND THE LAW

The Question of Assessors

ON Dec. 13th a London evening newspaper reported that a coroner had called in the treasurer of the London Football Association to assist him at an inquest on a man who died from injuries received while playing football. The evidence showed that the game was being fairly played and that the injury was accidental; the verdict was returned accordingly. One does not think as a rule of a coroner sitting with an assessor except in the statutory cases of accident inquiries—e.g., under the railway legislation of 1871 which enabled the coroner to apply to the Board of Trade, now the Minister of Transport, for the services of an expert.

On the same day, as it happened, Lord Dawson of Penn, speaking at the annual dinner of the Medico-Legal Society, referred to the possibility of placing scientific and medical men as assessors on the Bench where a court had to deal with the complex problems of crime, the prevention of crime, and the close association of crime with disease. The Court of Admiralty does not disdain the assistance of nautical assessors; why should the law be afraid of medical help in medical problems? The answer presumably would be that the law fears that the criminal will escape trial or conviction if the doctors have their say. Once the accused has been found guilty, the administration of justice is content that the sentence should be commuted on medical grounds which a judge would probably have rejected during the trial.

A Doctor's Experiences as a Company Director

A doctor of medicine has given his name to a leading case on a curious point of company law. In 1932 Prof. J. W. H. Eyre, M.D., formerly director of the bacteriological department at Guy's Hospital, was invited to join the board of directors of Milton Proprietary Ltd., a company which manufactures a disinfectant preparation. The company's articles of association prescribed that one-third of the directors should retire annually but should be eligible for re-election; the directors to retire should be those who had been longest in office; where two or more had served for an equal period, the retirement should be "decided by ballot." These innocent words were ambiguous. Did they mean "decided by lot" or "decided by a secret vote of the directors"?

When it was necessary lately to determine which directors should retire, there was one with the longest service who would therefore be the first to retire, and there were two others of equal length of service of whom one must be selected for retirement. These two were the chairman and Prof. Eyre. At a board meeting in November the chairman asked Prof. Eyre to sign and hand in his resignation; the request was refused. At a subsequent board meeting the question was put to the vote; Prof. Eyre and two other directors refused to vote; the remaining directors voted that the professor should retire. He then brought an action claiming a declaration that determination by ballot meant by drawing of lots and that the decision by a majority vote was illegal. Analogies were sought from the old Militia Act and other statutes. Mr. Justice Eve thought the articles intended to confine the decision to the directors and that "ballot" must mean a secret vote. The Court of Appeal last week upset the court below. The Master of the Rolls, agreeing that the words might be interpreted either way, found that the word "ballot" was used in the Companies Act of 1862 but that "lot" had been used in subsequent enactments. The language and the practical considerations (since there was no provision for a casting vote) led him to conclude that "ballot" in the defendant company's articles meant "lot." A further point of construction settled the matter temporarily in Prof. Eyre's favour in any event. In calculating the total number of directors, "additional directors" (appointed to hold office till the next general meeting) were to be disregarded. It resulted that only one director had to retire this month and thus neither the chairman nor Prof. Eyre need do so.

AGRANULOCYTOSIS AND AMIDOPYRIN

CORONER AND THE POISONS BOARD

ON Dec. 20th Dr. Bentley Purchase, coroner for St. Pancras, sitting without a jury, concluded his inquest on the body of a woman of 60 who died on Dec. 10th. The first hearing, on the 13th, was chiefly occupied by the evidence of the hospital physician and of Sir Bernard Spilsbury, who performed the autopsy. Sir Bernard then said that the body was that of a stout woman; the skin had a slight yellow tint, with no colour in the mucous membranes. There had been chronic osteo-arthritis of the spine and rheumatism. There was petechial hæmorrhage on the surface of the heart, which was enlarged; the cavities were all dilated, and there was a good deal of fatty disease of the muscle with brown atrophy, probably the result of the terminal pneumonia. The lungs were congested, especially the lower lobe, and there was acute broncho-pneumonia at the bases. The air-passages were reddened. The thyroid was somewhat small. The liver was rather fatty; there were small hæmorrhages in the spleen; the kidneys were enlarged and congested, and the suprarenals rather large. The tonsils showed acute inflammation, spreading over the wall of the pharynx, with some membrane on the surface. There was œdema of the glottis. A certain degree of chronic gastritis was found. The marrow in the shafts of the femora was a deep red. The evidence from the hospital where the woman died showed that the cause of death had been acute broncho-pneumonia. On admission the red cells had been normal but the white cells

numbered only 4400; this figure had subsequently dropped to 1000 and later risen to 2000, the terminal count. No polymorphonuclear cells had been found. The woman had been in hospital four days before she died. She had been regularly taking, for an unknown period, "HP Rheumatic Tablets" for her rheumatism.

At the second hearing the coroner said that he had adjourned the case primarily in order that the chemists who had sold the tablets might be able to give their point of view. One of the directors said that the tablets contained aspirin grs. $2\frac{1}{2}$, Pyramidon (amidopyrin) gr. $\frac{1}{2}$, and caffeine gr. $\frac{1}{2}$. They were identical with tablets sold by nearly every firm of manufacturing chemists. The prescription was on the bottle, and the tablets were packed by a well-known firm of wholesalers. His firm had sold them for several years but had never had a complaint before. Anticipating the coming into force of the Poisons Act on May 1st, 1936, the word "Poison" appeared on the label. Sir Bernard Spilsbury, in explaining the dangerous properties of pyramidon, said that the deceased had died from acute bronchopneumonia consequent upon agranulocytosis. During the last two or three years deaths had been reported as due to pyramidon, but they represented only a minute proportion of those who took the drug. The patients were not primarily susceptible but became so after taking it regularly for a long time; quite a small dose might then produce acute symptoms. The action was in this respect comparable with anaphylaxis. An eighth of a grain, he said, was a minute dose. In most fatal cases the patient had

taken the drug for a year or more; several weeks at least were required to produce sensitivity. An intractable sore-throat was a common symptom, for the blood condition lowered the resistance to infection. In the absence of bacteriological examination the condition might be taken for diphtheria, and had been so taken in a previous case before that court. In this case there was no evidence how many tablets the woman had taken; she must have had a good many bottles. The dose recommended on the bottle was two tablets three times a day. There was no question of an overdose. The body showed no general changes but only those produced by the agranulocytosis.

The coroner said that after the last case of the kind into which he had inquired he had communicated with the Poisons Board and the Home Office. He understood that provision was being made as from May 1st, 1936, to place pyramidon in the same group as the barbiturates, which would be controlled without being called "poisonous" or "dangerous." The need was to check the promiscuous sale of the drug. He proposed to refer this case also to the Poisons Board. The woman, he supposed, had been susceptible to pyramidon, and it was interesting to him that two such cases should have come before him within a short time. He accepted the evidence of the chemists that the drug had a perfectly proper use. It was important that general practitioners should know of the throat symptoms of agranulocytosis in order that they might distinguish it from diphtheria. He returned a verdict of death by misadventure.

PANEL AND CONTRACT PRACTICE

Conference Afterthoughts

PRACTITIONERS are sometimes in doubt as to whether they should be called upon to prescribe drugs and appliances for insured persons attending hospital. The relevant paragraph of the report of the Insurance Acts Committee, adopted after slight verbal amendment, indicates that—

When a patient is under the care of a hospital, institution or other doctor, it not infrequently happens that he returns with advice and suggestions to his family doctor as to the drugs and/or appliances to be ordered for him.

In the view of the I.A.C. a practitioner is called upon to prescribe for insured persons only during the time when he is actively engaged in treating them. His responsibility to prescribe ceases during the time the patient is in receipt of treatment by a member of a hospital medical staff.

As was the case last year, although the latest figures were satisfactory, London was criticised for the small percentage of its contribution to the National Insurance Defence Trust. Dr. Gregg objected to any suggestion that there was something mysterious about this. The London panel committee was doing its best to assist all forms of medical defence and he felt sure in due course would attain to 100 per cent. of its quota. Meanwhile it was paying also to another defence fund (that of the M.P.U.), the money subscribed, in the absence of precise instructions, being divided equally between the national fund and that of the union.

Warwickshire wanted the Ministry of Health to be asked to review the list of drugs and appliances included in the appendix to Part II. of the distribution scheme "so that certain obsolete articles could be excluded and certain modern and expensive prepara-

tions added." The wording of the resolution was perhaps hardly happy. Modern preparations are not always expensive. The list is of drugs and appliances which a practitioner may prescribe or supply (even if he is a prescribing practitioner) at the cost of the drug fund at the agreed tariff. It may, for instance, be more convenient for the doctor himself to supply a curative serum than to give the patient a prescription for it. It may be in the patient's interest that an elastic adhesive bandage should be applied forthwith in the surgery rather than that he should first have to fetch it from the chemist's. Dr. Dain reminded the conference that the list is continually being examined and revised.

Dental Letters

Dental benefit regulations under the National Health Insurance scheme were substantially modified at the beginning of the present half-year. Under these regulations documents known as dental letters are issued to members of approved societies in order to enable them to obtain dental treatment as insured persons. In his opening address to the recent winter session of the Dental Board of the United Kingdom, Sir Francis Acland drew public attention to the number of cases reported to the board on the ground that dental practitioners have obtained or might have obtained money under false pretences by giving incorrect certificates on these letters. In spite of the warning notice circulated in 1933 the practice still continues. Since the regulations of 1930 came into operation there have been 50 such charges. In about half of them the dentist's name is no longer on the register, either as a result of erasure (14) or by voluntary withdrawal. In 14 other cases the

discipline committee did not proceed to formulate a charge, and in 10 it was not thought necessary to erase the dentist's name. Sir Francis expressed the hope that the public attention directed to this reprehensible form of conduct would result in its diminution in the future. It should be noted that all those summoned to appear before the board on this charge appear in the register as "Dentist 1921" and the representative of dentists registered under the Dentists Act, 1921, has asked the board for a more honourable description than this in official documents. The chairman of the board agreed that if this description is regarded in any quarter as invidious the impression should be removed. There was a time when the term "panel doctor" was regarded almost as one of reproach, and it took some years for the public to realise that an insurance practitioner has to be a doctor first before he can join the medical list. The term "dentist 1921" does suggest sliding in through the side door, and its psychological effect can hardly be doubted. Legal advice has been taken and the question of an alternative title is to be considered at the next session of the Dental Board.

Extension of Benefits

At a conference of representatives of approved societies, insurance committees, and the British Medical Association held at B.M.A. House on Dec. 10th it was resolved:—

That this conference is strongly of the opinion that the addition of consultants and specialists and laboratory services to the benefits available under the National Health Insurance Acts is one of the utmost importance, and it was decided to appoint a committee, under the chairmanship of Dr. H. G. Dain, to bring forward suggestions for the provision of these services. Each of the three parties concerned in the conference is to appoint six members to serve on this committee.

Local Transfers: An Innovation

The Norfolk insurance committee, in agreement with the local panel committee, have adopted a new form of procedure in connexion with transfer of insured persons from one doctor's list to another. The regulations of 1931—which, by the way, are provisional regulations and have never been made substantive—provide that an insured person wishing to change his doctor, other than upon removal outside the area of the practice of his original doctor, shall be entitled to do so, if he has not later than the last day of February, May, August, or November in any year given notice to the committee in writing of his desire to transfer, whereupon he will be entitled to transfer as from the end of March, June, September, or December next following. He can of course change his doctor at any time with the written consent of both doctors. The Norfolk committee find that the majority of requests to transfer are based solely on the ground of convenience consequent upon removal. Although they have removed the insured persons in question are still within the district of the doctor upon whose list their names are included, but having moved nearer to another doctor practising in the district want to change on account of distance. The Norfolk committee propose giving effect to all requests for transfer where there has been a change of address and are asking practitioners in the area to agree to this course of action. The regulations will still apply where there has been no change of address. The insured person will then either have to obtain the consent of the

doctor for a transfer forthwith or give due notice to the insurance committee. The procedure in effect is asking the practitioners in the area to give a consent in advance to the immediate transfer of any insured person who has changed his address. It seems to be a common-sense arrangement for a rural area and will be watched with interest. We learn that the proposal has commended itself to nearly all the practitioners in the county.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. Comdr. W. Flynn to rank of Surg. Comdr.
Surg. Lt. Comdr. J. G. Currie to *President* for course.
Surg. Lt. H. L. Cleave to *Maine*.
Surg. Lts. (D) A. MacD. Watson to *Barham*; and
F. R. McN. Willis to *Shropshire*.

ROYAL ARMY MEDICAL CORPS

Short Serv. Commissions.—Lts. J. Reeve, C. G. O'Driscoll, and L. E. Odum to be Capt's.

The results are announced of the examination (in written subjects) of officers with a view to promotion which was held at Home Stations last October. Among those successful are: Majors T. H. Twigg, A. J. Bado, F. K. Escritt, and L. Handy, and Capt. G. T. L. Archer, R.A.M.C.

REGULAR ARMY RESERVE OF OFFICERS

Lt. J. W. Walker, M.B., K. Afr. Rif., Res. of Off., to be Lt.

Maj. G. J. Keane, C.M.G., D.S.O., M.D., having attained the age limit of liability to recall ceases to belong to the Res. of Off.

MILITIA

Maj. J. Melvin, M.C., M.B., resigns his commn.
Maj. P. Walsh retires on attaining the age limit and retains the rank of Maj.

TERRITORIAL ARMY

Lts. A. M. Robertson and R. W. Nevin to be Capt's.

ROYAL AIR FORCE

Flying Offr. on probation James Patton Carlile relinquishes his short service commission on account of ill-health.

Flying Offrs. C. F. R. Briggs, H. D. Conway, L. M. Crooks, W. J. Fowler, I. K. Mackenzie, H. C. de B. Milne, D. J. Sheehan, and R. F. Wynroe, all to Medical Training Depôt, Halton, on appointment to short service commissions with effect from Dec. 2nd.

Dental Branch.—Flying Offrs. R. M. Brown and W. E. Nelson to Medical Training Depôt, Halton, on appointment to non-permanent commissions.

INDIAN MEDICAL SERVICE

Lt.-Col. W. J. Powell, C.I.E., to be Col.
Capt. R. A. Wesson to be Maj.
Capts. K. S. Fitch and S. C. H. Worseldine to be Maj's. (provl.).
Lt.-Col. C. A. Godson, M.C., retires.

THE BRITISH AMBULANCE SERVICE IN ETHIOPIA has been absorbed by the British Red Cross Society, and Sir Harold Fawcus, director-general of the society, has been appointed chairman of the committee with Mr. J. G. Rubio as secretary. All British Red Cross relief in Abyssinia will be dealt with by this committee, the offices of which have been removed from 33, Alfred-place, S.W.7, to the Red Cross headquarters, 14, Grosvenor-crescent, London, S.W.1.

CORRESPONDENCE

THE UNDESCENDED TESTICLE

To the Editor of THE LANCET

SIR,—The very interesting paper of Drs. Spence and Scowen in your issue of Dec. 14th confirms an opinion to which I came several years ago when discussing "undescended testicles" with those who were then treating them with thyroid extract. This opinion was that much argument within the profession, and many inaccurate forecasts delivered to the lay public, might be avoided if it were recognised that two quite distinct classes of pathological conditions were being lumped together.

The first class suffers from a delay in development, similar to the late eruption of teeth or the late development of pubic hair. To it belong about two-thirds of the cases sent me by physicians with a diagnosis of undescended testicles; and the proportion appears to me much the same in the series described. Perhaps, however, I should hesitate to put even in this class such cases as 18, 22, and 32, regarding them not so much as abnormal as falling short of an ideal. I always advise against operation in this class—though it is often performed, with on the whole the results one would expect when a demonstrably false anatomy is taught as its foundation. When adult nearly all of them are normal, though the cases described appear to prove conclusively that development can be hurried up by preparations such as Pregnyl.

The second class suffers from a congenital deformity, analogous to hare-lip or thyroglossal cyst; and like them is only amenable to surgery. To give hormone treatment in these cases a "trial before surgical measures are undertaken" is to inflict needless pain, expense, and disappointment. It is, of course, impossible within the limits of a letter to describe this class and its diagnosis, but its recognition seems to me to give that "hard-and-fast rule as to which type of case will be successful" whose absence is deplored. For instance, if Nos. 9, 14, 17, 20, 27, 28, 29, 30, 31 had all been regarded as needing operation because of the presence of hernial sacs, and No. 25 classed as the commonest variety of ectopia, the figures for hormone treatment would have been very much better.

I am, Sir, yours faithfully,

DENIS BROWNE.

Queen Anne-street, W., Dec. 17th.

CHRONIC NASAL SINUSITIS AND MENTAL DISORDER

To the Editor of THE LANCET

SIR,—Your footnote to Dr. Pickworth's letter of Nov. 9th (p. 1090) regarding controlled data is difficult to understand in relation to the ætiological viewpoint of mental disorder put forward in his book on this subject. For many years I have studied intimately the clinical association of focal infection and mental disorder, and have published a number of cases illustrating the beneficial effect on states of mental disorder of the eradication of such foci (THE LANCET, 1932, ii., 57 and 115), and I am not able to regard a difference between pyorrhœa and sinusitis as fundamental in the matter of causation as you suggest. Dr. Pickworth agrees on this point, and there is much clinical and histo-pathological evidence to support the view that *both* can act as sites for providing the cause of those particular physical brain changes to which mental disorder is probably due. Okell

and Elliott's findings (published in your issue of Oct. 19th, p. 869) of continued bacteriæmia in chronic pyorrhœa give sound pathological support to our past clinical observations.

The mentally healthy controls which you ask for are practicably unobtainable. If you had in mind an investigation of infirm patients, then I would point out that a large number of mental hospital patients are drawn from infirmaries, and in many other infirm patients a psychiatrist could readily detect mental changes, even if not present to a degree necessitating certification. To collect a series of control cases it would be necessary to make sure that they had pathological processes identical in nature, extent, and duration to those described in Dr. Pickworth's book, because the occurrence of chronic sinusitis in any given case merely indicates a *tendency* to mental disease and/or other systemic and allergic disorders.

I am, Sir, yours faithfully,

T. C. GRAVES.

Rubery Hill, Birmingham, Dec. 14th.

AN ALUMINIUM KETTLE

To the Editor of THE LANCET

SIR,—A patient of mine has been in the habit of drinking about 8 to 10 breakfast cups of tea during the day, using an aluminium kettle to boil the water. After about a month he began to suffer from stiffness and pain in the back of the neck and head. This got worse during the next two months, and eventually he consulted me. The stiffness and pain seemed to be of a rheumatic nature, and I rather suspected a doubtful-looking tooth to be the fons et origo. The usual remedies were tried without avail.

Some months later my patient, after reading a letter in the *Times* on aluminium poisoning from cooking vessels, resolved to stop using his kettle. The results were dramatic and beneficial, and he is now completely recovered. He naturally feels that the aluminium kettle has been the culprit. I do not know that aluminium can get into the system in this way, and if it can do so, that it will cause the above-mentioned symptoms, but shall be interested to know if any of your readers have had a similar experience.

I am, Sir, yours faithfully,

H. WILLMOTT ELWELL.

Mirfield, Yorkshire, Dec. 15th.

MEDICAL DEGREES OF CONTINENTAL UNIVERSITIES

To the Editor of THE LANCET

SIR,—A medical practitioner of my acquaintance, who thought of going abroad for post-graduate study, where he might at the same time prepare a thesis for the doctorate and thereby gain an M.D. degree, tells me he was discouraged from doing so by a high medical authority. But the fostering of post-graduate study in other States—for medicine, like music, is truly international—is most desirable, both from the scientific and the political points of view. Nearly all the earlier Presidents of the Royal College of Physicians of London were M.D.'s of Padua, Bologna, or other continental universities; later on they were admitted into the same degree at Oxford or Cambridge by incorporation, no tests or examinations being demanded. The standard of continental degrees is far higher to-day than it was then. Nor does the registrability of such degrees arise, since the registrability of degrees is a purely

political consideration. Registration of foreign degrees permitting the practice of physic over here depends upon whether British graduates or diplomates are admitted to the register permitting practice in the foreign country concerned. It is simply a question of international reciprocity. For example, for a time the M.D. degrees of the Belgian universities were registrable in this country; their holders were allowed on our register and permitted to practise here, and correspondingly our registered medical practitioners were allowed to practise in Belgium. Holders of the M.D. degree of the Royal Italian universities, or of the medical degrees (M.B. and M.D.) granted by imperial universities in Japan are entitled to have their names on the foreign list of our register and the privilege is reciprocal. But the cessation of this reciprocity would not affect the intrinsic value of the degrees. Of no lower standard or lesser worth are the medical degrees of German and Swiss State universities, not one of which admits to the British medical register. Nor does any British degree or diploma give its holder the right to practise in Germany or Switzerland, which have plenty of their own nationals and do not encourage foreigners to practise in their territories.

What then is the meaning of an M.D. degree from a continental university? It is precisely the same over here as an M.D. Oxon., Cantab., or Lond. is over there—i.e., purely an academic title much in the same sense as is a M.D. or D.Sc. Oxon., or a D.D. or LL.D. Cantab. All are simply university degrees. The medical authority quoted above was confusing a degree that admits to the register and entitles its holder to practise medicine in the country, with a degree which is purely a university title. A man may be registered in virtue of his M.R.C.S., L.R.C.P., but he may be as well M.A. Oxon., Ph.D. Lond., M.D. Geneva. The M.D. of Lausanne or Geneva is, as a university degree, every bit as good as an M.D. of Cambridge, Dublin, or Edinburgh; it costs far more, and takes far longer to secure. It would be only fair for all such continental M.D. degrees to be registrable by the General Medical Council as "additional titles by practitioners previously registered," as was the case with many of them before 1886.

I am, Sir, yours faithfully,

CHARLES A. H. FRANKLYN,
Hon. Secretary of the Lausanne Medical
Graduates' Association.

Lincoln, Dec. 15th.

REGULATION OF PROSTITUTION

To the Editor of THE LANCET

SIR,—I was surprised to read in Dr. D. White's letter that the examination of prostitutes in continental countries is a perfunctory procedure, taking one or two minutes. This may have been true at the time Flexner's book was published, but surely up-to-date and excellently managed clinics are now established in Paris and the leading French towns. These clinics are staffed by specialists provided with every modern facility for diagnosis, and the results show that brothels are not the source of contagion. Why, may I ask, has Germany returned to the system of regulation?

I am, Sir, yours faithfully,

Stamford, Dec. 17th.

C. ROLLESTON.

To the Editor of THE LANCET

SIR,—Dr. White makes no allowance for the difficulties of continental countries. Liable to invasion, they must keep preventable disease out

of their armies by the methods recommended by their own experts; the hardship of examination to a few women is nothing to that of conscription to all their men. We had such examination a few years ago—and may have still for all I know—in Malta and Gibraltar, our naval bases. In Egypt during the war we, as the protecting power, could under martial law have stopped the system there of examination, and the military authorities were asked to do so by a leading chaplain. But they refused to do so in the interests of our soldiers' health, and their strongest supporter in this was the English doctor at the head of the International Quarantine Board.

I am, Sir, yours faithfully,

Bournemouth, Dec. 16th.

TRAVELLER.

* * "Traveller" writes with the authority of a combatant officer who was on the spot. But, we believe, the argument that inspection of prostitutes protects troops has proved fallacious. Even in circumscribed areas like Malta and Gibraltar it produced a feeling of false security. Experience in Egypt during 1914-19 proved its worthlessness. There the regulations in force before the war were carried on, but the number of clandestine prostitutes was so great, and the examination of registered women so perfunctory, that it soon became evident that regulation and inspection, as carried out, were valueless.—E.V. L.

PAIN AND EUTHANASIA

To the Editor of THE LANCET

SIR.—Death is after all a rather radical way of abolishing pain, and I should like to associate myself with what Mr. Blundell Bankart has said in your issue of Dec. 21st, as I believe that there are very few cases of physical pain, no matter how severe, which, if drugs have failed to ease cannot be relieved by surgical means. Even before the failure of drugs to relieve, surgical relief is frequently advisable in order to prevent the demoralising effect of large doses of opiates. In common with others I have found bilateral division of the pain tracts in the cord a valuable procedure, giving relief to patients suffering from the severe pain of advanced malignant disease. The outlook for the patient may be brightened and entirely changed.

For those of us who believe that our duty is to fight for the life of our patient at all costs while at the same time doing all that we can for his comfort, surgery is a most efficient and useful weapon which as a means of relieving pain should not be overlooked.

I am, Sir, yours faithfully,

LAMBERT ROGERS.

Surgical Unit, the Royal Infirmary,
Cardiff, Dec. 22nd.

GLASGOW HOSPITAL EXTENSIONS.—The Glasgow corporation has approved the expenditure of £231,000 for the provision of further accommodation for nurses and patients in Glasgow mental institutions.

WINTFORD ORTHOPEDIC HOSPITAL.—Sir Francis Cowlin on Dec. 11th laid the foundation-stone of the new wards at this hospital school. It is hoped to increase the 68 beds now in use to over 100, and shareholders of Bristol Housing, Ltd., have provided £10,000 for this purpose. Facilities for education are available at the hospital, and the children have the benefit of country air.

OBITUARY

AUGUSTUS JOSEPH PEPPER, M.S. Lond.,
F.R.C.S. Eng.

THE death on Dec. 18th of Mr. A. J. Pepper at the age of 86 removes from the stage the almost legendary figure of a successful surgeon who became an official medico-legal expert. Mr. Pepper was educated at University College, London, of which later he was elected a fellow. After serving an apprenticeship with a medical practitioner in the midlands he entered U.C. Hospital with a scholarship. The name Augustus J. Pepper, of Harrowden, at the head of every list of prize-winners in each term soon became familiar in the school, and he showed his pre-eminence in the wider field of competition by winning



MR. PEPPER

three gold medals at the 1st M.D. Lond. examination and as many in the final with scholarships in medicine, surgery, and forensic medicine. He took the F.R.C.S. Eng. in 1876 and the M.S. of Lond. a year later. After being demonstrator of anatomy and surgical tutor at U.C.H. he accepted the invitation to become surgical tutor and pathologist at St. Mary's Hospital, where he soon showed that he could teach as well as learn. Teaching to him was a delight shared in by the students who attended in large numbers his demonstrations in the wards and the post-mortem rooms. In 1883 he published his handy "Elements of Surgical Pathology," which had a wide circulation and went through several editions. Appointed a supernumerary in 1880, he had a long spell as surgeon to out-patients at St. Mary's (1882-97) before reaching the full staff. In the meanwhile he was surgeon to the London Fever Hospital where, at a time when scarlet fever and diphtheria were of a severe type, he had many operations to perform, especially on mastoid cases.

When at last in 1897 (he was then 46) he became full surgeon to St. Mary's he fulfilled his early promise. He was an accomplished anatomist, full of resource, and a successful operator. Röntgen's discovery was not available at any rate during the early period of Pepper's career to unravel hidden mysteries, nor were all the recent advances in medical science at hand to aid in diagnosis, but Pepper's amazingly retentive recollection of all he had ever observed or heard afforded him a store-house of valuable experience. He gained a large private practice in Wimpole-street, which with his hospital work and the calls on him in forensic cases and contributions to the medical press made him a busy man. But mental work was to him an exhilarating exercise. He never tired and was always alert in body and mind. His devotion to medical jurisprudence was by no means an afterthought. As long ago as 1887 he gave a post-graduate course at St. Mary's on practical legal medicine, in which he described the situations that commonly come to the notice of the medical jurist and especially the various causes of sudden death. In one of these lectures he called attention

to the risk of injecting even dilute solutions of corrosive sublimate into body cavities owing to the risk of absorption and mercurial poisoning. While pathologist at St. Mary's he was frequently asked by the coroner for the district, the late Dr. Danford Thomas, to assist him by his evidence at inquests; this led to his being subsequently called on in the same capacity by the Crown in criminal cases, and he was in time appointed official pathologist to the Home Office. He appeared in the Euston-square and the Harley-street murder cases and other important trials. He was called in for the Crippen case, in which Willcox, Spilsbury, and A. P. Luff assisted him; he was a witness in the Druce case and helped to solve the Moat Farm mystery.

Pepper had many friends at University College, among them George Viner Ellis, for many years professor of anatomy there, who regarded Pepper as the most brilliant of the hundreds of students who had passed through his hands, and Pepper frequently stayed with him in Gloucestershire in later years and helped in the revision of Ellis's well-known "Demonstrations of Anatomy." Another intimate friend was his fellow student, Leander Starr Jameson of "Jameson raid" fame. Pepper was well read in English literature and was seldom at a loss for an apt quotation. He was of simple habits; he had nothing to conceal and was true and honest in all he said and did. He had little time for holidays, but enjoyed a day's shooting or a visit to a race-course.

Sir William Willcox writes: "Mr. Pepper was a short, well set, active man of very vivid personality. When confronted with any difficult surgical diagnosis he at once stripped the history of all extraneous matters and went straight to the point, making an exact diagnosis which was almost invariably correct. His clear mode of thinking and logical mind made him a brilliant, popular, and impressive clinical teacher and lecturer. In the operating theatre he was at his best. His precise knowledge of anatomy and pathology made him perfectly at home even in the most difficult operations, and his courage and resource in sudden emergencies were outstanding. When his surgical dresser in 1898 I well remember his removing a large cirroid aneurysm of the ear in a young woman. The case had often been shown at the F.R.C.S. examinations and any candidate who advised operation was severely criticised for recommending the impossible. This case came under Pepper's care when operation was the only chance of saving the patient's life owing to recurring hæmorrhages. Pepper operated in the presence of a crowded theatre of students, and as one of his assistants I well remember the furious hæmorrhages which occurred, necessitating the use of all the Spencer Wells forceps in the theatre. Pepper went on with the operation, cool and undaunted, and successfully completed it. The young woman made a good recovery and afterwards married and had a large family.

"Pepper was much loved and admired by the students who crowded to his lectures and clinical rounds. He was a loyal and greatly appreciated colleague who was always ready to give freely of his knowledge and experience to his fellow members of the staff. He figured in many famous criminal cases; the last case in which he participated was the Crippen case in which he was assisted by Spilsbury and myself. His logical mind and incisive expression

made him an expert witness whose testimony held good in spite of cross-examination however severe. Indeed he was treated with great respect and caution by cross-examining counsel.

"In private life Pepper was of a somewhat retiring disposition. His intimate friends knew that he was a fine whist player, fond of country life and of his garden in which he was an expert horticulturist. His colleagues and friends will always remember the inspiration they received from his lovable and impressive personality."

Sir Bernard Spilsbury adds: "My acquaintance with Mr. Pepper dates from 1902, when I became his surgical dresser at St. Mary's Hospital. What impressed us as students was his quiet, confident bearing. He never became flustered or lost his temper, and was prompt and sure of himself in an emergency; we came to realise later his complete competence as a surgeon. Even though he occasionally stroked his moustache during an operation—these were the days before masks were worn—we seldom saw post-operative sepsis in his wards; indeed, complications of any kind were rare. I well remember on one occasion his seeing for the first time a patient with sarcoma of the antrum which had been pronounced inoperable. After a brief examination he gave a demonstration on the case to his class, and within an hour, in the course of the afternoon's operations, he did a total excision of the upper jaw. The patient made an uninterrupted recovery and returned to the hospital three months later to have an artificial jaw made. I have known him, when asked by a medical colleague to examine one of his patients as a possible acute abdomen, to borrow a stethoscope and demonstrate pneumonia of the base of the lung as the explanation of his symptoms. Later, when I became pathologist to St. Mary's, Pepper impressed me by his thorough knowledge of pathology and histology; he was quick to recognise the detailed structure of a difficult microscopical preparation and very sound in his interpretation. When we became associated in medico-legal work he exhibited the same qualities, an absolute certainty of his facts and a quiet competence in the witness-box, which, whilst it made a great impression upon the jury, was the despair of opposing counsel. He was a quiet, reserved man, alert and shrewd, with a fund of common sense, ever ready with a word of encouragement. The pupil who did his best was never forgotten, and had in Pepper a friend for life."

Mr. Pepper is survived by his widow. There were no children of the marriage.

**SIR HILARION MARCUS FERNANDO, J.P.,
M.D., B.Sc. Lond.**

Sir Marcus Fernando, who died in London on Dec. 18th at the age of 71, was a leader of the profession in Ceylon. A member of a family with old associations on the island, where he himself owned considerable property, he also took an active part in legislation and was knighted in 1923 for his public services. At the age of 19 he was elected Ceylon Government scholar and Gilchrist scholar for the East from the Royal College, Colombo, and he studied medicine at University College, London, where he obtained the Atchison and entrance scholarships. He was elected Fellow of the College in 1890. He qualified in 1888, having won the gold medal in physiology, medicine, and forensic medicine. He gained the M.D. in the following year and returned

to Ceylon. There he was registrar of the Medical College and first physician of the General Hospital, being recognised both by his colleagues and by the Government as an authority on malaria and plague. When he retired from the medical service in 1909, he devoted his attention to public work and became a member of the legislative and executive councils, a magistrate and the president of the Catholic Union. He married Margaret Francis Mary, daughter of Lady de Soysa, of Colombo, and had a son and a daughter.

FREDERICK SHAW, M.C., M.B. Dub.

WE regret to record the death of Dr. "Freddie" Shaw, chief medical officer to the Iraq Petroleum Company. The elder son of the late Horace C. F. Shaw, a prominent official of the Irish Land Commission, and a cousin of Mr. G. B. Shaw, Frederick Roland Studdert Shaw was born in Dublin in 1892, and graduated in medicine at Trinity College in 1915, passing forthwith into the Royal Army Medical Corps, and proceeding to France where he served throughout the remainder of the war and gained the Military Cross. Transferred after the war to India he commanded a motor ambulance convoy on the frontier, and did sterling work during a serious cholera epidemic in Waziristan. His next appointment was on the staff of Sir Charles Burchaell, then director of medical services, from which he was transferred for service with the Iraq levies. During the Kurdish revolt in 1922 Captain Shaw was instrumental in obtaining the release of two R.A.F. officers who had been captured by Sheik Ahmed against whom a column was operating. Being given permission to enter the country he proceeded alone and unarmed to visit these prisoners, and ultimately effected their release. On resigning his commission he joined the Iraq Petroleum Company in October, 1927, and did pioneer work whilst the company was in its infancy. During the pipe line construction he initiated and supervised the medical and sanitary arrangements, later becoming chief medical officer. He was returning from a visit by plane to see a sick colleague at Kirkuk and had landed at Haditha where the apparently mild attack of tonsillitis from which he was suffering took a rapidly fatal turn. Captain Shaw was a fine athlete and cricketer. While a student at Dublin he was 100 and 220 yards champion of Ireland, and won the vice-chancellor's cup. He also captained the Dublin University and Gentlemen of Ireland cricket team, and later played for the Army on several occasions. Unassuming in manner he was a keen and capable medical officer, sanitarian, and administrator, an excellent chief and colleague, and a good companion whose loss will be felt by a large circle of friends in the Near East and India. He is survived by his widow and two children.

**FRANK CHETWODE CRAWLEY, M.D. Dub.,
F.R.C.S. Irel.**

AFTER only a few days' illness Mr. Frank Crawley died on Dec. 16th, at the age of 64. His term of office as president of the Royal College of Surgeons in Ireland ended last year.

By birth a Dublin man, he was educated at Shrewsbury, at Cambridge, and at Trinity College, Dublin, where he graduated in medicine in 1896. He was admitted to the fellowship of the Royal College of Surgeons in Ireland in 1900, and his choice from the first was the field of ophthalmic surgery,

with which for some years he combined the surgery of the throat, nose, and ear. Soon after qualification he was appointed house surgeon to St. Mark's Ophthalmic Hospital, Dublin (now merged in the Royal Victoria Eye and Ear Hospital), where he spent some years, and he subsequently worked in Vienna and Berlin. After that he practised his specialty in Dublin. In 1917 he spent some months in the British Expeditionary Force in France as a member of the staff of the "83 (Dublin) General Hospital." For many years a member of the council of the Royal College of Surgeons in Ireland, in 1932 he was induced to accept the presidency, and held this office until June, 1934. At the time of his death he was senior surgeon to the Royal Victoria Eye and Ear Hospital, ophthalmic surgeon to the Royal City of Dublin Hospital, and consulting ophthalmic surgeon to the Rotunda Hospital and to the Molyneux Asylum for the Blind.

In his younger professional days Crawley made many communications to the *Proceedings* of the Royal Academy of Medicine and other medical

publications. In later years the demands of a large private practice, in addition to his hospital work, stood in the way of much writing, but never interfered with his scientific interests or his keeping in touch with modern development. "In his own specialty," writes our Dublin correspondent, "he was at once a cool and successful operator on the eye and a consultant whose view was not limited to the eye. In particular, in medical cases in which there were ophthalmic complications, physicians found him an ally of resource and strength. He disliked publicity and took little part in public medical affairs, but when the responsibility of office came on him as president of his College he showed great capacity for affairs. He gave a personal attention to matters of detail and brought an independent judgment to every problem which came before him. In social life he was the most pleasant of companions, cultured, gay, and kindly. Everyone who met him recognised his intelligence, his directness, his uprightness; when one knew him better one recognised also the good heart which made him the most steadfast of friends."

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Christmas Adjournment

BOTH Houses of Parliament adjourned on Friday, Dec. 20th, for the Christmas recess. They will reassemble on Feb. 4th.

HOUSE OF COMMONS

MONDAY, DEC. 16TH

Hospital Treatment of Ex-Service Men

Mr. GIBBINS asked the Minister of Pensions the number of ex-Service men receiving treatment by the Ministry of Pensions hospitals without receiving treatment allowances.—Mr. R. S. HUNSON replied: I regret that statistics such as the hon. Member requests are not regularly collected. I am, however, satisfied from the reports I have received that every case in which a loss of wages or profits has been sustained by a man who was employed before admission to hospital, or in which a corresponding loss of benefit or grant in respect of unemployment was necessitated by such admission, should now, with the aid of the supplementary grant scheme which I announced in the House on Oct. 22nd last, be substantially met by the grant of allowances of whatever kind may be appropriate to the case.

Government's Pure Milk Policy

Sir PERCY HURD asked the Prime Minister whether he was aware of the hindrance to progress in the milk policy of the Government arising from methods of administration under which the Ministry of Health supervised the production of Certified and Grade A (T.T.) milk, while the Ministry of Agriculture promoted a scheme dealing with tuberculosis in dairy herds and the Milk Marketing Board had an accredited herd scheme on different lines; and whether steps could be taken to co-ordinate these services and so abate confusion and discouragement in the production of milk of approved quality.—Mr. BALDWIN replied: I am not aware that any hindrance is caused to the milk policy of the Government by reason of the facts referred to. There is full consultation between the Ministry of Health and the Ministry of Agriculture in matters affecting the quality of the milk-supply, and it is their practice to ascertain the views of the Milk Marketing Board on all questions in which the Board are concerned.

Hospitals and Telephone Charges

Mr. DONNER asked the Postmaster-General whether he was aware that the Andover War Memorial Hospital

have, in view of their services to the community, appealed to the telephone department to be charged at the private residence rate and not at the business rate, and that the application had been refused; and whether he would take steps to lighten this burden on institutions of this nature.—Major TRYON replied: Unfortunately, it is not possible to view this application in isolation. There are many institutions—apart from hospitals—which are of undoubted service to the community and in relation to which a similar claim might be made. It would be impossible to discriminate between them, and, if the desired concession were made to all, the loss of revenue would be considerable while the relief to the individual institutions concerned would be comparatively small. In view of this and of the difficulty of maintaining the distinction between the business and the private residence rates if concessions are made which are at variance with the principles on which that distinction is founded, I have felt compelled to refuse to make exceptions to the general regulations in the case of any institution, deserving though it may be of sympathy and support.

Footwear for Necessitous Children

Miss WILKINSON asked the Minister of Health whether he was prepared to introduce legislation to enable local authorities to levy a rate for the provision of footwear for necessitous children.—Mr. SHAKESPEARE replied: No, Sir. There is no necessity for such legislation. Public assistance authorities already have power to provide adequate relief in all cases of need, and relief may be in money or in kind as may be appropriate to the particular circumstances.

Composition and Description of Foods

Sir ARNOLD WILSON asked the Minister of Health whether and, if so, when he proposed to introduce legislation to give effect to the recommendations of the report of the departmental committee on the composition and description of food and, in particular, for the revision and consolidation of statute law on the subject.—Sir KINGSLEY WOOD replied: Legislation to consolidate the law relating to local government and public health is being prepared by a committee which will in due course take up the question of consolidating food legislation.

TUESDAY, DEC. 17TH

Safety of Workers in Mines: Royal Commission

Miss WARD asked the Prime Minister whether he was now in a position to make an announcement about the proposed Royal Commission to inquire into the provisions for the safety of workers in mines.—Mr. BALDWIN replied: I am able to announce that His Majesty has been pleased

to improve the appointment of the following to serve on the Commission: Lord Rockley (chairman), His Honour the Judge George Clarence Allsebrook, Sir Malcolm Delevingne, Sir Henry Walker, Mr. D. R. Grenfell, M.P., Mr. Edward Otto Forster Brown, Mr. Ebby Edwards, Mr. William Thomas Miller, Mr. William Hamilton Telfer, and Mr. John Walker. The terms of reference are: To inquire whether the safety and health of mine workers can be better ensured by extending or modifying the principles or general provisions of the Coal Mines Act, 1911, or the arrangements for its administration, having regard to the changes that have taken place in organisation, methods of work, and equipment since it became law, and the experience gained; and to make recommendations.

WEDNESDAY, DEC. 18TH

Enteric Fever in Palestine

Lord ARSLEY asked the Secretary of State for the Colonies whether, in respect of the recent epidemic of enteric fever among the British police stationed at Jerusalem, any arrangements had been made for the convalescence of members of this force; and, if not, whether he would be willing to consider the provision of such.—Mr. THOMAS replied: There has been no epidemic of enteric in the British section of the Palestine police at Jerusalem or elsewhere. Only six cases have occurred this year, of which four have been discharged from hospital completely cured. The two others are progressing satisfactorily.

THURSDAY, DEC. 19TH

Poisons List and Rules

Mr. HALL-CAINE asked the Home Secretary when regulations were likely to be introduced to bring into effect the recent recommendations of the Poisons Board; and whether such regulations would vary in any way these recommendations.—Sir JOHN SIMON replied: The Poison List and Rules will be issued at the end of the present month. There are certain differences from the original recommendations, but the modifications have been decided upon after consultation with the Board.

Hospital Patients and Polling Facilities

Major GUEST asked the Home Secretary whether he would consider the possibility of providing facilities to enable hospital patients to record their votes at elections if on the register.—Sir JOHN SIMON replied: I will have my hon. friend's suggestion noted for consideration in connexion with any opportunity that might arise for reviewing the present system of voting by post.

Governor of Holloway Prison

Mr. PETHICK-LAWRENCE asked the Home Secretary whether, when he was appointing a governor of Holloway prison in the place of the late Dr. Morton, he would consider the advisability of appointing a woman to that position.—Sir JOHN SIMON replied: The vacancy in the governorship of Holloway prison was filled in July, after carefully considering all the circumstances, by the appointment of Dr. J. C. McI. Matheson, D.S.O.

Black-listed Schools

Mr. KIRBY asked the President of the Board of Education the number of elementary schools in Liverpool which had been black-listed; and what steps were being taken to place such schools in a satisfactory state either by reconstruction or replacement.—Mr. OLIVER STANLEY replied: The number of public elementary schools in Liverpool which are still on the list of schools with defective premises is 34. The problem which these schools present cannot be satisfactorily solved by their treatment in isolation from one another or without due regard to housing difficulties. The Board are in consultation with the local education authority and the authorities of the non-provided schools with a view to assisting them to formulate a comprehensive plan for dealing with the problem.

Mr. THURTELL asked the President of the Board of Education how many schools were now black-listed; and how many of these were non-provided schools.—Mr. OLIVER STANLEY replied: The number of schools on the list of

schools with defective premises is now 1104, of which 772 are non-provided schools.

Physical Training at Schools

Mr. RANKIN asked the President of the Board of Education what was the present approximate annual contribution made by way of Government grant to assist the provision of gymnasiums, playing fields, and physical training organisers at elementary and secondary schools in Great Britain; and whether he was satisfied that progress in the provision of such necessary amenities was proceeding satisfactorily.—Mr. OLIVER STANLEY replied: It is estimated that during the current financial year a grant of approximately £35,000 will be paid for the organisation of physical training in public elementary schools. The corresponding figure for secondary schools cannot be ascertained. As the expenditure on gymnasia and playing fields is not returned as a separate item in the local education authorities' accounts, I regret that I am unable to answer the hon. Member's question on this point. As regards the second part of the question, the Government are anxious to accelerate progress with the provision of facilities for physical training, and I am proposing to issue a circular to local education authorities on the matter in the near future.

Malnutrition in Lancashire

Mr. SILVERMAN asked the President of the Board of Education whether he had considered the statement of the responsible medical officers that malnutrition among Lancashire school-children had seriously increased; and what steps, if any, he was prepared to take to remedy this state of affairs.—Mr. OLIVER STANLEY replied: In his annual report for the year 1934 the school medical officer for Lancashire gives particulars of an increase in malnutrition from 1.75 per cent. in 1933 to 2.19 per cent. in 1934 amongst routine cases. In 1930 the percentage was 2.16. As regards the second part of the question the school medical officer explains in his report that the provision of free meals and milk is more than keeping pace with the malnutrition discovered at medical inspections.

Free Milk for Necessitous School-children

Brig.-General SPEARS asked the President of the Board of Education whether he would issue instructions that free milk should be given to all children of school age whose parents were unemployed persons on the means test, in view of the desirability of the maximum number of children getting milk at school and of the fact that unemployed persons on the means test could not in most cases afford to pay for milk for their children.—Mr. OLIVER STANLEY replied: The conditions under which local education authorities may provide free milk for children attending public elementary schools are governed by the terms of Section 84 of the Education Act, 1921, and under that section I have no power to issue the instructions which my hon. friend desires. I would invite the attention of the hon. Member to the Board's Circular 1443 which sets out the Board's policy on the selection of children for provision of meals.

National Maternity Service

Mr. DAY asked the Minister of Health whether he had considered the copy of the resolution unanimously recommended by the council of the British Medical Association, urging the appointment of a national maternity service; and whether he would consider introducing legislation to give effect to the suggestions contained in the resolution.—Sir KINGSLEY WOOD replied: I have received a copy of the memorandum referred to by the hon. Member and I will give it my careful consideration. I cannot at present undertake to introduce legislation on this subject beyond that already promised for securing an organised service of salaried midwives.

Overcrowded Houses

Sir FRANCIS FRENANTLE asked the Minister of Health if he was aware that, until he had declared the appointed day under Section 3 of the Housing Act, 1935, new tenants might be added without offence and, in fact, were being so added to already overcrowded houses; and if he would state how soon he would be able to declare the appointed day, respectively, for London and the area.—Sir

KINGSLEY WOOD replied: I am aware of the desirability of fixing the appointed day in such a way as to minimise the difficulties to which my hon. friend refers, but I must take into account progress made in the provision of new accommodation required for the abatement of overcrowding.

Sterilisation

Sir ARNOLD WILSON asked the Minister of Health whether and, if so, when he proposed to introduce legislation to give effect to the recommendations of the report of the departmental committee on sterilisation (Cmd. 4485, 1933); and what had been the results of his consultation through the Board of Control with the Medical Research Council and the Registrar-General.—Sir KINGSLEY WOOD replied: The Government do not propose to introduce legislation for this purpose at present. The consultation referred to in the latter part of the question is not complete, and inquiries on certain matters on which research was recommended by the departmental committee are still in progress.

Anæsthetics in Animal Experiment

Mr. GROVES asked the Home Secretary whether electric immobilisation or injection of starch grains into the carotid artery were held as complying with the provisions as to anæsthetics under the Act 39 and 40 Vic., c. 77, relating to experiments on animals; whether he was aware that these respective methods were in use for the purpose of producing anæsthesia in experiments on animals; and whether there were any specific regulations laid down in connexion with the granting of licences for such experimentation as to what did, or did not, constitute an anæsthetic within the meaning of the Act.—Mr. GEOFFREY LLOYD replied: I am advised that electric immobilisation and the injection of starch grains into the carotid artery are effective methods of causing complete insensibility in animals, but they are never used in the laboratories as substitutes for the recognised anæsthetics. There are no specific regulations defining anæsthetics and there is no definition in the Act, but there is attached to every Certificate B (the certificate permitting cutting operations with subsequent recovery) a condition requiring that the anæsthetic administered must be of sufficient power to prevent the animal feeling pain.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 14TH, 1935.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2636; diphtheria, 1234; enteric fever, 29; acute pneumonia (primary or influenzal), 952; puerperal fever, 42; puerperal pyrexia, 96; cerebro-spinal fever, 17; acute poliomyelitis, 4; acute polio-encephalitis, 1; encephalitis lethargica, 3; dysentery, 33; ophthalmia neonatorum, 55. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 20th was 3467, which included: Scarlet fever, 1120; diphtheria, 1273; measles, 203; whooping-cough, 355; puerperal fever, 21 mothers (plus 13 babies); encephalitis lethargica, 279; poliomyelitis, 4. At St. Margaret's Hospital there were 17 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 30 (3) from measles, 6 (1) from scarlet fever, 15 (3) from whooping-cough, 36 (5) from diphtheria, 39 (11) from diarrhoea and enteritis under two years, and 62 (11) from influenza. The figures in parentheses are those for London itself.

Liverpool reported 11 deaths from measles, Middlesbrough 3, Walthamstow, Manchester, and had 3 fatal cases of whooping-cough reported.

Manchester, 3 from Birmingham, 2 each from Portsmouth, Leeds, and Newcastle-on-Tyne. The mortality from influenza is scattered over 29 great towns, Liverpool reporting 6, Manchester and Birmingham each 5, Burnley 3.

The number of stillbirths notified during the week was 256 (corresponding to a rate of 44 per 1000 total births), including 42 in London.

KING EDWARD'S HOSPITAL FUND

A JUBILEE DISTRIBUTION

ADDRESSING the general council of King Edward's Hospital Fund for London on Dec. 17th the Prince of Wales as president announced that the ordinary annual distribution of £300,000 is to be supplemented this year by a Silver Jubilee distribution of £120,000. Most of this sum (£109,000) is taken from accumulated surpluses; the remainder comes from the sale of seats at the two Jubilee processions, allotted to the Fund by the Office of Works. The additional distribution is designed to meet one of the most urgent needs of the present moment. Since the financial crisis of 1931 the hospitals, with few exceptions, have succeeded in raising enough money to maintain their beds, but have not been able to do as much as usual to bring their buildings and equipment up to date, many urgent schemes of extension and improvement being deferred. It is to the assistance of such schemes, and of others which have been completed but not fully paid for, that the Silver Jubilee distribution is being devoted. The grants, of course, can cover only a small proportion of the cost of each scheme. "For the rest," said the Prince, "the hospitals must rely on the generosity and sympathy of the public, already shown by the fact that during the last five difficult years £550,000 a year has been received by hospitals in London for these purposes, in addition to £1,300,000 a year in voluntary gifts to maintenance."

The total distribution by the Fund on Dec. 18th, including £5000 for pensions, thus amounts to £425,000. Since 1931, when an ordinary distribution of £300,000 a year was initiated to meet the emergency, it has been difficult to provide this sum out of annual receipts, and this year the grants are not yet wholly covered. The deficiency (about £7000 last week) would be greater but for an anonymous donation of £15,000, the ninth from the same donor during the past 13 years. The fall in interest rates is reducing investment income, and the Prince appealed for the help of new contributors to make good the loss. He pointed out that during the past 25 years the average annual increase in distribution had been about £7000, whereas during the nine years when King George was president of the Fund the ordinary distribution had increased from £50,000 to £150,000—an average increase of £11,000. This was a challenge to the present generation, and he thought it should be possible, in the improving circumstances of the times, to raise the sum required each year without competing with contributions to individual hospitals. A central Fund provided facilities for benefactors who were not specially interested in any particular hospital and were not in a position to judge between their respective claims. It was noteworthy that the Bank of England, having recently increased their contribution to hospitals, had asked the Fund to allocate it on their behalf—a request which was much appreciated. The Fund would gladly do the same service for other donors. Another new piece of work undertaken was a grant towards the services of District Nursing Associations. So far only £2000 could be spared for the purpose, but the Fund would like to offer more support, partly because it wished to help the excellent work of district nurses and partly because this work lessened congestion in hospital out-patient departments. One of the claims of the Fund to public support is that it exercises many of the functions of a central

for the hospitals of London. In this connexion Prince referred to its memoranda on time-saving aids in out-patient departments, its inquiry into the hours of waking patients, and its procedure in the detailed examination of building schemes. "As noteworthy," he said, "that nearly 1000 new beds had been provided since 1931 and that more than 2000 were proposed, apart from pay beds and future extensions."

These figures," he added, "suggest two things. One is the remarkable vitality of the voluntary hospital system, which goes on growing at this rate, at a time when so many people suffer from an apparently incurable condition that it is dead. The other is that, if the voluntary hospital service is to continue to live and grow on the scale in present-day conditions, the individual hospitals must realise that they are parts of one service, and each must have regard to the collective interests of the whole. The King's Fund, as a central body, calls attention to the total liability involved in all these decisions."

It was satisfactory to see that the hospitals were adding to the number of pay beds, of which there was still a real shortage.

After speaking of the recent amalgamation between the London Voluntary Hospitals Committee and the London regional committee of the British Hospitals Association, the Prince concluded by mentioning another great co-operative effort on the part of the hospitals, helped and indeed largely stimulated by the "King's Fund"—namely, the Federated Superannuation Scheme for Nurses and Hospital Officers. In the first seven years during which the Fund promised financial grants had now expired and the scheme was firmly established, having been adopted by 88 per cent. of the hospitals of London or 73 per cent. of those in Great Britain as a whole, reckoned on a bed basis. The £5000 allocated to pensions covers the first three months of the initial period. The expenditure of the hospitals on the scheme will now be regarded as part of their normal outgoings, which will be taken into account by the Fund in making the financial grants.

Under the Silver Jubilee distribution 76 hospitals have received grants towards capital expenditure. Those which benefit by sums of £1000 or more are the following:—

Beckenham Hospital (£1000); Bolingbroke Hospital (£1000); British Hospital for Mothers and Babies, Woolwich (£1250); Central London Throat, Nose, and Ear Hospital (£1000); Charing Cross Hospital (£2000); Ednought Hospital, Greenwich (£2500); Elizabeth Garrett Anderson Hospital (£1000); German Hospital (£1000); Guy's Hospital (£2000); Hospital for Consumption, Brompton (£1000); Hospital for Sick Children, at Ormond-street (£10,000); King George Hospital, at Ormond-street (£10,000); King's College Hospital (£2500); London Hospital (£3000); London Jewish Hospital (£1500); Metropolitan Hospital (£2500); Middlesex Hospital (£1000); Miller General Hospital for South-east London (£500); National Hospital, Queen-square (£5000); Royal Free Hospital (£2000); Prince of Wales's Hospital (£2500); Princess Elizabeth of York Hospital for Children (£5000); Queen Charlotte's Maternity Hospital (£4500); Queen's Hospital for Children (£1000); Royal Eye Hospital (£2500); Royal Northern Hospital (£1250); St. Bartholomew's Hospital (£2500); St. George's Hospital (£3000); St. Mark's Hospital (£1000); St. Mary's Hospital (£4000); St. Thomas's Hospital (£1000); South London Hospital for Women (£500); University College Hospital (£5000); Westminster Hospital (£2000); Westminster Hospital (£10,000); Redden General Hospital (£3000); Woolwich and District War Memorial Hospital (£3500).

In view of these contributions to capital schemes, the smaller proportion than usual of the £300,000

distributed in ordinary grants will go to such objects and a larger proportion to maintenance. The maintenance grants will amount to £272,850 as compared with £254,375 last year, and will be "mainly allocated to the reduction of debt resulting from past deficits at hospitals which have had exceptional difficulty in coping with financial depression."

BUCHAREST

(FROM OUR OWN CORRESPONDENT)

SICKNESS INSURANCE IN JUGOSLAVIA

THE first social insurance Act in Jugoslavia was passed in 1901 and amended in 1908 and in 1925. As the law now stands there is compulsory insurance for all industrial workers and for all workers in trade and agriculture whose annual income is under 10,000 dinars (about £50). Each district has its own independent pay office, and there are also a very few so-called company pay offices. Each pay office has an executive board of 9 or 12 members, half elected from the employees and half from the employers, and each office is responsible to the Supreme Insurance Sickness Council on which the medical profession has many representatives. Two-thirds of the contributions to the scheme are made by the employees and one-third by the employers, while the State bears half the cost of the administration of the district pay offices. Members may receive free medical attendance, medicine, appliances, and hospital treatment, together with a sickness benefit amounting to half their wages for a maximum period of 26 weeks. Dependants receive benefits only when the financial position of the pay offices permits, and in all cases the pay offices have the right to insist that one-quarter of the benefits received shall have been contributed by the member himself. The pay offices employ their own medical officers, but members have the right to consult any other doctor they may choose, and the pay offices then pay the private doctor at their usual panel rate. There are altogether 154 panel doctors in Jugoslavia, and they are paid according to their attendances at a minimum scale fixed by the National Medical Association for private physicians. In 1934 the average fee for a consultation was 10 dinars (about one shilling), for a visit 15 dinars, and for a night visit 30 dinars. Medical payments are under the control of a committee which is appointed by the syndicate of doctors, and consists of three doctors, one dentist, and ex officio the principal doctor of the pay office concerned. The choice of drugs is left to the discretion of the panel doctors, but a hint is given to them as to the possibility of choosing the less expensive remedies and to refrain from needlessly ordering expensive foreign proprietary preparations. The prescriptions are supervised by the doctors and pharmacists of the insurance offices. Chemists must give a reduction of 20 per cent. on their ordinary prices, and if their yearly bill exceeds 15,000 dinars (about £75) the rebate is 25 per cent. The sickness allowances are arranged by the panel doctors. The number of members, inclusive of dependants, amounts to 14.3 per cent. of the population.

REGULATION OF RUMANIAN MANUFACTURING CHEMISTS

Owing to the currency restriction Act importers of foreign drugs have to pay 44 per cent. more for the goods they buy abroad to make up the difference between the quotation price and the selling price

of foreign currencies. As a result the price of all imported drugs has been raised by 50 per cent. The home manufacturing chemists have taken advantage of this to raise their prices by 44 per cent., arguing that the prices of the raw materials used in the manufacture of their products had been increased by this amount. The Government has protested against this attitude on the grounds that only one-fifth of the raw materials are imported from abroad, and they regard the increase in price as an unjust and unjustifiable exploitation of the public. An order has therefore been issued for the reduction of the prices to their former level on pain of heavy penalties. It is not only since the import price has been raised that foreign drugs have become dear. Last year a kilo of aspirin cost 3000 lei wholesale; now it costs 4000 lei, while its retail price has risen from 3600 to 4800 lei. Last year one kilo of pyramidon cost 13,000 lei, now it costs 18,000 lei; similarly the wholesale price of quinine has risen from 3400 to 4500 and the retail price from 5000 to 7000 lei. English drugs show the greatest increase in price (50 per cent.), then French (40 per cent.), and then Italian (25-30 per cent.). Italian products

are fairly widely used here. The extraordinary rise in price is detrimental not only to the chemists but also the medical profession, for many patients refrain from consulting a doctor simply because they are afraid they will not be able to afford to pay for the drugs ordered.

A NEW JOURNAL ON RABIES

Under the title *Buletinul Serviciului Antirabic* a new periodical has been launched under the auspices of the staff of the Bucharest Babes Institute. This institute was named after its founder Prof. Babes, who started his career at Budapest as assistant to Prof. Högyes; its present director, Prof. Proca, is the editor of the new journal. For the present the journal will appear as a quarterly, but if sufficient interest is aroused it will later be issued as a monthly. In its first number it is stated that during last year the five antirabic institutes of Rumania inoculated 21,000 persons, while in Germany only 138 persons were inoculated. During the first eight months of this year the Babes Institute alone has treated 7434 patients bitten by dogs. In Rumania there were 126 deaths in 1934.

MEDICAL NEWS

University of Cambridge

On Dec. 19th the following degrees were conferred:—

M.B., B.Chir.—D. G. Allen.

B.Chir.—Robert Anderson and C. W. Thomas.

Royal College of Surgeons of England

At the primary examination for the fellowship held during December 228 candidates presented themselves, of whom 70 were approved and 158 rejected. The following are the names and medical schools of the successful candidates:—

H. H. Barst, Middlesex; G. M. Bastedo, M.D. Toronto, Middlesex; R. L. Benison, M.B. Camb., St. Bart.'s; B. B. Bhatia, M.B. Lucknow, Univ. Coll. and Middlesex; J. W. Bone, M.B. Glasg., Univ. Coll.; J. B. Cadas, M.B. Glasg., St. Mary's; R. I. Campbell, M.B. Sydney; A. H. Charles, M.B. Camb., Middlesex; W. S. Charlton, M.B. Sydney, Middlesex; G. R. Clarke, M.B. Birm., King's Coll.; E. P. Connolly, M.B. Sydney, King's Coll.; H. G. N. Cooper, B.M. Oxon, Guy's; J. W. Cope, B.Chir. Camb., St. Bart.'s; R. V. Coxon, Guy's; C. F. Critchley, M.B. Lond., St. Thos. and Middlesex; A. J. Daly, Middlesex and Univ. Coll.; D. R. Davies, M.B. Lond., Univ. Coll.; A. P. Dick, Camb. and Lond.; C. D. Donald, M.B. Melb., Middlesex; M. Fatin, M.B. Cairo, Guy's; H. C. Fletcher-Jones, M.B. Lond., Univ. Coll. and Middlesex; S. Green, Guy's; M. T. Greig, M.B. N.Z., Otago and Middlesex; R. W. Gunderson, Middlesex; T. D. Hagger, M.D. Melb., Univ. Coll.; R. Sampson Handley, M.B. Camb., Middlesex; F. J. Hayden, M.B. Melb., Univ. Coll. and Middlesex; A. J. Helfet, M.B. Liverp.; J. Howkins, M.B. Lond., Middlesex; W. R. Hunter, M.B. Liverp.; L. B. Joshi, M.B. Bombay, Middlesex; L. O. Knox, M.R.C.S. Eng., Univ. Coll. and Middlesex; C. D. Langton, M.B. Sydney, Univ. Coll. and Middlesex; L. W. Lauste, M.B. Lond., St. Thos. and Middlesex; R. S. Lawson, M.B. Melb., Univ. Coll. and Middlesex; A. W. Little, St. Bart.'s and Middlesex; J. B. McEwen, Glasgow and Middlesex; M. E. MacGregor, St. Thos.; R. G. Mackenzie, M.D. Toronto, Middlesex; R. J. H. McMahon, St. Bart.'s; A. G. McPherson, Camb. and St. Thos.; C. P. V. Menon, M.B. Madras, Middlesex; H. Milne-Redhead, Edin. and Middlesex; P. L. Mollison, Camb. and St. Thos.; W. R. M. Morton, M.B. Belf.; P. H. Newman, M.R.C.S., Middlesex; W. M. Nichols, M.B. Glasg.; K. I. Nissen, M.B. N.Z., Middlesex and Univ. Coll.; R. Officer, M.B. Melb., Univ. Coll. and Middlesex; G. H. C. Owens, M.R.C.S. Eng., St. Mary's; A. D. Popat, M.R.C.S. Eng., Bombay and Lond.; K. W. Powell, St. Thos.; S. H. Raza, Guy's; A. M. Rennie, M.B. Aberd., Middlesex; D. K. Sambrook, St. Thos.; G. N. Sen, M.B. Calcutta, Middlesex and Univ. Coll.; J. B. Sherman, M.B. Melb., Middlesex; A. A. Shorter, M.B. Sydney; S. F. Smith, M.B. Lond., St. Thos. and Middlesex; H. Sobhi, M.B. Cairo, St. Bart.'s; A. K. Talwalkar, M.B. Bombay, Middlesex; R. G. Talwalkar, M.B. Bombay, Middlesex; K. H. Taylor, St. Thos.; Margaret D. Thomas, Royal Free; K. B. Thornton, St. Thos.; O. G. Tanks, M.B. Sydney, Univ. Coll. and Middlesex; J. D. Wade, Camb. and Univ. Coll.; W. W. Wiggins-Davies, Camb. and St. Thos.; E. L. Wilson, M.B. N.Z.; and N. A. F. Young, St. Bart.'s.

University of Sheffield

L. A. Bull and William Ellis have passed Part II. of the final M.B., Ch.B. examination.

University of Liverpool

At recent examinations the following candidates were successful:—

M.CH. ORTH.

D. G. W. Brown, H. L. Davies, R. J. Katrak, G. E. Thomas, and E. F. West.

M.D.

R. S. Brock, S. Canter, J. G. Hailwood, and G. G. Warburton.

M.CH.

M. J. Bennett-Jones, F. R. Edwards, and J. A. Martinez.

M.B., CH.B.

Joan G. Jones (second class honours).

Part B (1924 Regs.).—C. H. H. Bryson and S. V. Cullen.
Part III. (1929 Regs.).—A. Cohen, H. W. F. Croft, Phillis Dingle, T. Laithwaite, L. Millward, and Moira Murray.

Part I.—S. Ball, J. L. Boyars, A. M. Bro Fraser, Doreen M. M. G. H. Shaw, and Henrietta Sloan.

Part II.—G. H. Ellidge, H. Gewater, Gwendollen M. Hughes, B. Polonsky, D. M. Rosenfeld, and R. B. Wright.

D.T.M.

V. F. Anderson, M.D., Alva A. Daniell, H. F. Ezzat, M. Farooq, A. Z. Hakeem, M. A. Hamid, M. A. M. Khalil, A. Kirshner, M. N. Lahiri, A. H. S. Mahallawy, Marjorie B. Morton, M. A. Nasr, R. J. O'Connor, K. O'Toole, R. V. Patel, S. K. Ting, M. A. el Tobgy, Mary A. Tomlinson, T. P. Tu, and E. B. Weeks.

Dr. A. Kirshner and Dr. R. J. O'Connor were recommended for Milne medals.

Royal College of Surgeons of Edinburgh

At a meeting of the College held on the 17th, with Mr. Henry Wade, president, in the chair, the following candidates having passed the requisite examinations were admitted to the fellowship:—

Madhav Vinayak Bhajekar, M.B. Oxon.; John Mark Carnow, M.B. Glasg.; Bernard Stringfellow Carter, M.R.C.S. Eng.; Thomas Beveridge Davis, M.B. N.Z.; Leonard Leon Jozel, Antoine de Rynck, M.R.C.S. Eng.; M.B. Edin.; Gilbert Forbes, M.B. Glasg.; Gillies, M.B. Leeds; Alan Mostyn Bradford Grant, M.D. Sydney; Ralph Clifford Hunter, M.B. Sydney; Claude Wilfred Alfred Kimbell, M.B. N.Z.; William Lamont, M.B. Glasg.; John Cyril McFarland, M.D. Liverp.; Neville Jennings Nicholson, M.B. Edin.; Charles Justly Probyn Pennors, M.R.C.S. Eng.; Isaac Victor Rogoff, M.B. Cape Town; Ian Harry Macgregor Seex, M.B. Edin.; John Love Steele Scott, M.R.C.S. Eng.; Andrew Copeland Taylor, M.B. Toronto; and Lennard Gilmour Travers, M.B. Melb.

University College Hospital Medical School

On Friday, Feb. 28th at 5 p.m., Dr. Cecil Price-Jones will deliver the eleventh Sydney Ringer lecture at this school. He will speak on the sizes of red blood-cells. Sir Robert Muir, F.R.S., will preside, and the lecture is open to all medical practitioners and medical students.

University of London

At a meeting of the senate held on Dec. 18th Dr. Thomas Nicol was appointed to the university chair of anatomy King's College.

Dr. Nicol is 35 years of age and was educated at Glasgow, graduating as M.B. with commendation in 1922. After holding house appointment at the Western Infirmary, Glasgow, and demonstratorship of anatomy at the university, he became lecturer in regional anatomy and senior demonstrator. In 1925 he was appointed senior lecturer, and for a time he has been acting head of the department of anatomy in the university. Dr. Nicol's contributions to medical journals have included experimental studies of reproductive physiology. In 1925 he was admitted to the fellowship of the Royal College of Surgeons of Edinburgh; he became D.Sc. Glasg. in 1934 and D. with honours last year.

The degree of D.Sc. in anatomy was conferred on Mr. D. M. Blair and Prof. H. H. Woollard. Dr. MacD. Paterson and W. A. Steiner, of Guy's Hospital, have passed the third examination for the B.D.S. degree, the former with distinction in orthodontics.

National University of Ireland

At recent examinations in University College, Cork, the following candidates were successful:—

M.B., B.Ch., B.A.O.

O. T. D. Loughnan (first-class honours): William Kearney, J. J. Sayers (second-class honours): Vincent Bennett, William Kearney, Michael Kirwan, Owen Loughnan, Cornelius McGrath, Samuel Nathan, V. J. O'Sullivan, William O'Sullivan, Bridget F. Jordan, T. J. Seavers, and Catherine M. Sullivan. Part I.—John O'Sullivan, Margaret M. M. Reynolds, Gerald F. Russell, John Russell, and Helen P. Tracey.

D.P.H.

D. F. Burke, T. G. A. Carroll, R. A. Good, M. J. Kennefick, J. P. Morehan, J. J. Murphy, J. P. O'Leary, and Elizabeth J. H. Phipps.

Royal Sanitary Institute

In 1936 this institute will make an award of the Henry Baron Snell prize to the writer of the best essay on improvements in the construction or adaptation of sanitary appliances. Competitors are asked to submit essays which are not merely accounts of developments which have taken place but which present constructive suggestions. Further particulars may be had from the secretary of the institute, 90, Buckingham Palace-road, London, S.W.1.

Memorial to Dr. Dan McKenzie

To perpetuate the memory of the late Dr. Dan McKenzie a fund is being raised to name a room after him in the new nurses' home at the Central London Throat, Nose, and Ear Hospital, with which he was intimately associated for over thirty years. Gifts should be sent to the chairman at the hospital (Gray's Inn-road, London, W.C.1).

Demonstrations of Contraceptive Technique

On Thursday, Jan. 2nd, at 2.30 P.M., a practical demonstration of the technique of the use of a variety of contraceptive methods will be given by Mrs. Marie Stopes, D.Sc., and Dr. Evelyn Fisher at the clinic of the Society for Constructive Birth Control. Medical practitioners and senior students should apply in writing to the hon. secretary at the clinic, 103, Whitfield-street, London, W.1.

Christie Hospital and Holt Radium Institute, Manchester

At the annual meeting on Monday Dr. E. Bosdin Leach, chairman of the medical board, spoke of steady progress made in dealing with cancer, and quoted Dr. Veitch Clark's description of work in progress at Manchester University as the only piece of work preventive of cancer that had yet been done. Mr. H. S. Souttar, who delivered an important address, began by recalling that it was in Manchester that he first learned of the great results that could be obtained by the use of radium in the treatment of cancer. In the Christie Hospital, he said, Manchester had a centre the work of which was not excelled anywhere in Europe. Mr. F. P. Nathan remarked that when the new hospital was built he and others had feared that there would not be patients forthcoming to fill it, but they had two deep X ray therapy plants fully occupied; and it would soon be necessary to set up two more, with the buildings capable of holding them.

THE King has conferred the Bar to the Order of Mercy on Colonel R. J. Blackham, C.B., M.D.

Royal Medical Benevolent Fund of Ireland

The annual meeting of this fund was held in Dublin on Dec. 13th, Dr. J. C. Martin presiding. The annual report, submitted by Sir John Moore, hon. secretary, expressed regret that the subscriptions, had shown a falling-off since the previous year of nearly £60. There had been a revival of the County Cork branch where there were some 50 new subscribers. In speaking on the report, Mr. T. Hennessy urged that the State should provide pensions for the widows of its medical officers.

International Congress of Physical Medicine

The sixth international congress of physical medicine will be held in London from May 12th to 16th under the presidency of Lord Horder. The congress has been divided into six sections (kinesitherapy, physical education, hydrotherapy and climatotherapy, electrotherapy, actinotherapy, and radiotherapy and radium therapy), and the three main subjects for discussion will be the physiological and biological study of physical agents, the clinical indications of the different methods of physical treatment, and the benefits and proper use of exercise in the healthy, and the teaching of physical medicine in the different countries. The hon. secretary is Dr. Albert Eidinow, 4, Upper Wimpole-street, London, W. 1.

Camp into Hospital

Redmires Camp is to be converted by the Sheffield corporation into a hospital for mental defectives. In recent years it has been used as a small-pox hospital, but it was built in 1914 for the training of the City Battalion, and has also served as a camp for German prisoners.

Births, Marriages, and Deaths

BIRTHS

BEDDARD.—On Dec. 18th, the wife of J. R. J. Beddard, M.R.C.S. Eng., of Frome, of a son.

HARVEY.—On Dec. 18th, at Satton, Surrey, the wife of Dr. T. Blair Harvey, of a son.

LING.—On Dec. 13th, at Streety, Staffs, the wife of Dr. Thomas M. Ling, of a daughter.

PHILLIPS.—On Dec. 19th, at Wilbraham-place, S.W., the wife of Dr. W. H. Phillips, of a son.

SMALLSHAW.—On Dec. 15th, at Epsom, the wife of Dr. D. B. Smallshaw, of a son.

WATERS.—On Dec. 16th, at Bombay, the wife of Captain H. S. Waters, M.B. Camb., F.R.C.S. Eng., L.M.S., of a daughter.

DEATHS

CHESNEY.—On Dec. 20th, suddenly, at Palma de Mallorca, Spain, Lillian Mary Chesney, M.B. Edin., D.P.H., second daughter of the late General Sir George Chesney, K.C.B., R.E.

COLLIER.—On Dec. 21st, at Oxford, William Collier, M.D. Camb., F.R.C.P. Lond., aged 79.

DAMPIER-BENNETT.—On Dec. 20th, suddenly, at Sidmouth, Arthur George Dampier-Bennett, M.R.C.S. Eng., M.O.H. for Sidmouth, aged 65 years.

FERNANDO.—On Dec. 18th, in London, Sir Hilariion Marcus Fernando, M.D. Lond., of Colombo, Ceylon, aged 71.

HART.—On Dec. 18th, suddenly, at North Walsham, Norfolk, James Duncan Hart, M.C., M.B. Glasg., aged 52.

MCILROY.—On Nov. 22nd, suddenly, at Kendall, New South Wales, John Black McIlroy, M.R.C.S. Eng., L.R.C.P., L.S.A., second son of the late Major and Mrs. McIlroy, of Woolwich.

PEPPER.—On Dec. 18th, at Sidcup, Kent, Augustus Joseph Pepper, M.S. Lond., F.R.C.S. Eng., aged 86.

PHELPS.—On Dec. 14th, at Tonbridge, Kent, Arthur Martin Phelps, M.D. Camb., aged 86.

RYAN.—On Nov. 30th, at 9, East Hill, Colchester, Essex, Joseph Michael Ryan, M.B. Durh., L.R.C.S.I. & L.M., L.A.H. Dublin, aged 82 years.

WESTMACOTT.—On Dec. 20th, at his residence, Colonel Frederic Hibbert Westmacott, C.B.E., B.Sc., F.R.C.S. Eng., T.D., D.L., Knight of Grace of the Order of St. John of Jerusalem, late R.A.M.C. (T.), Consulting Aurist and Laryngologist, Manchester Royal Infirmary, aged 68.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

MEDICINE AND FAITH *

By C. LOUIS LEIPOLDT, F.R.C.S. Eng., D.Litt.

LECTURER ON PEDIATRICS, UNIVERSITY OF CAPE TOWN; VISITING
PEDIATRIC PHYSICIAN TO THE NEW SOMERSET HOSPITAL;
EDITOR OF THE SOUTH AFRICAN MEDICAL JOURNAL

MEDICINE I assume to be the art of healing and tending the sick, founded on principles formulated by the experience of centuries of study of the human body in health and disease. It is an art and not a science, although ancillary to it are the definite sciences of physiology, anatomy, biochemistry, psychology, and pharmacology. Like all other arts it has its limitations, chief of which is its inability to systematise its experience into an incontrovertible creed. It is, and must be, largely empirical, its experience founded on trial and error methods assisted by such help as it may obtain from the exact sciences. The fact that a man practises medicine and is a registered medical practitioner does not imply that he is bound to limit his practice to one method, however orthodox, or is debarred from using whatever help he may obtain from other methods, always providing that he makes no secret of these methods and does not vaunt his own fads as decisively superior to those of his fellow practitioners. The register, in fact, is a statutory roll, provided by the Government for the safety of the public, of such practitioners of healing as have gone through that preliminary training which the State demands from those who are allowed to hold public appointments, sign death certificates, or sue for their fees.

A definition of faith is less easy, but I may perhaps be permitted to adopt the familiar definition: "Faith is the faculty that enables us to realise the unseen." It is not a comprehensive, or even a satisfactory, definition but it differentiates between matters on which we can exercise our scientific judgment and those which we cannot weigh and measure by scientific standards.

DIVORCE OF MEDICINE FROM THE CHURCH

In the remote past, medicine and magic were, we know, synonymous terms, and the practitioner of medicine was primarily concerned with these imponderables that are now considered to be more in the province of the priest than in that of the doctor. That is still the case in many uncivilised communities. When medicine became recognised as a separate art, it emerged from the shadows of the temple. After a few centuries it again migrated to church or monastery, and among the greatest exponents of our art have been monks and theologians, like Maimonides whose eighth centenary both theology and medicine celebrated this year. With the decline of monasticism in the west, medicine once more assumed an independence which it has since maintained.

One may doubt if it has been altogether a gainer by this determined divorce from the Church. The attitude of the Church—and by the church I mean not one denomination or sect, not one system of religion, but all organisations that admit the validity of what Burckhardt called "primordial images" and Jung styles *Urbilder* or archetypes, as a basis for an ethical creed—the attitude of the church

towards healing has always been definite and logical. It is based on the belief that pain and disease are realities, and as such amenable to objective treatment. All religions recognise that mankind has been given knowledge and skill to heal, and that the professional healer, the physician, has qualified himself by training and experience, to deal with the mass of disease to which mankind is subject. But all religions, too, have assumed that spiritual values count for more in man's life than what is material, and that while healing is usually an affair of mundane arrangement, it is occasionally one of faith, to be managed by the direct interposition of non-material forces. These are assumptions utterly beyond argument. They rest on that conception of faith that admits that what is impossible may happen. At first sight it may seem that medicine and the church, which makes such assumptions, must be directly antagonistic, and if medicine were an exact science that would undoubtedly be the case. But medicine is not an exact science: *it is not even a science; it is an art which enshrines* certain basic facts, or what it takes to be facts, in an empirical system that can never be static but must continually yield to the force of new facts as they are elicited.

PROGRESS SLOWING UP

Medicine to-day is marking time. To the layman, fed on the sensational tit-bits doled out by the lay press, that may seem an over-statement, but it is nevertheless the truth. In surgery we have, I think, reached the limits, wide as they were, which the discoveries of Semmelweis and Lister marked. The old surgeons thought of operations which their technique was too poor to enable them successfully to carry out. We have progressed beyond them, although, as a matter of fact, no one has yet attempted some of the operations suggested by their flights of imagination—the intra-abdominal reduction of a spinal dislocation for instance. But surgery is tending to become more conservative, and in pure medicine our progress has been slow, although in the realm of preventive medicine, and in biochemistry we have every reason to be proud of what has been achieved. Sir William Gull, one of the most acute medical men of his day, refused to believe in the possibility of scientifically defining disease, and to-day most of us would support him in that refusal. We discourage our patients from talking about disease, although we pander to their itch for definitions by labelling their illnesses by high-sounding names wherever we can—and sometimes when we honestly can't. For the layman as well as for the doctor it is much more practical to speak of pain and suffering. They are not tangible things, it is true, but they are concepts of subjective disturbance which everyone knows. As doctors we do not know the real significance of pain in every case where we encounter it. Much has been written on it; it has been held to be Nature's warning of impending disaster, a clamant call for rest, but unfortunately it is a warning sometimes absent in the gravest conditions, such as cancer, and vociferous in some of the least importance such as a superficial burn of the finger. To the doctor, however, it is a reality with which he comes into daily contact, and which he can often ameliorate and sometimes conquer. To the layman pain is the best sign of disease.

From time to time the public is stirred by stories of wonderful new ways of healing, told, mostly, to

* A public lecture (abbreviated) delivered at Grahamstown, South Africa, on Sept. 30th, 1935.

the disparagement of medical men. At the present time Australia is much concerned about a new method of treating infantile paralysis. In this disease we try to improve the condition of the paralysed limbs, but we cannot, by any method known to us, restore the integrity of the end station in the spinal marrow. Recently a nurse in Australia announced that she had found a method of treatment by means of which these paralysed children could be made more or less normal. The medical profession at once declared itself willing and eager to coöperate with her, and Sir Alfred Cilento induced the Australian Government to provide her with all facilities to prove the efficacy of her method. The new treatment was immediately investigated, and although it showed some points of superiority, it was found to be by no means so certain or so easy a method of alleviating the results of infantile paralysis as those already in use.

FUNCTIONAL AND ORGANIC DISEASE

Medical men have for centuries drawn a useful although perhaps unscientific line between functional and organic diseases. By functional disease we mean a condition that disarranges the normal functions of the body without leading to a demonstrable change in any organ or tissue. By organic disease we mean a condition that injures an organ or tissue in such a manner that we can prove that injury by chemical or microscopical tests. A transient headache is an example of the first; a broken leg of the second. The distinction between the two categories is practically useful but it is not philosophically sound, for disturbance of function must depend on some fault in the machinery, and although that fault may at present be undetectable by our means of investigation, we cannot assert that it does not exist. The insistence on the validity of these categories has perhaps done harm both to our medicine and our faith, for it has led us to limit the possibilities of healing by faith to diseased conditions that fall into the first category. Every experienced doctor knows of functional disease that has been alleviated by methods outside the purview of orthodox medicine, and of individuals whose very presence in the sick room is of benefit to the patient; some may even go further and claim that they know men and women who possess remarkable powers of healing. The belief in this charismatic gift, this power of healing inherent in some individuals, is as old as history, and is limited to no country or class; it is practically universal. The opportunities to test such individuals are few, and so far as I know, no scientific investigation of their powers has been attempted. The Church—and again use that term in an all-embracing sense—has always believed in such powers. The great religious leaders have all possessed it, and their records abound with instances where they have exercised it beneficially. Experience, through centuries, has taught us two vital facts. One is that there can be no healing without faith, without that conviction that rests must inevitably follow no matter how impossible such results may seem. On the recognition of this essential primary fact all great spiritual healers have based their practice. "According to thy belief, be thou healed" is recorded of Buddha when he cured the blind man, and all the examples of spiritual healing recorded in the Christian scriptures show that iswerving faith on the part of the sufferer was an essential pre-condition. The second important fact that in no recorded case of faith healing can we truthfully speak of a miracle in the sense that it was a complete and unequivocal

reversal of natural law. In every hospital, in every psychiatric clinic to-day such miracles are performed by appropriate suggestion, sometimes conscious, sometimes unconscious, without anybody considering that there has been any reversal of natural laws. Medicine has not denied, and cannot deny, the possibility of such latent power, for many of its masters have themselves cured patients by unorthodox means, although to tell the truth some of them like Werlhof and Sir Astley Cooper seem to have been somewhat shamefaced about their share in the cure.

Again, we have the proved fact that sick people have been cured by prayer, by relics, by suggestion, by faith. Hitherto the faculty has always assumed that these cures were of purely functional disease, and even yet there is a general feeling that the allegations about the cures of organic disease cannot be substantiated. But the carefully documented evidence of Dr. le Bec, in his book *The Medical Proof of Miracles*, which describes three cases of the cure of organic disease at Lourdes, and the equally careful records of Dr. Elwood Worcester of the Emmanuel Church movement, must force us to reconsider our attitude in this matter, and may lead to a readjustment of our views on faith-healing.

ATTITUDE OF MEDICINE TO FAITH-HEALING

What, then, is the present attitude of medicine towards faith-healing? That of the Christian Church is concisely expressed in the thirteenth and fourteenth verses, chapter v., of the Epistle of St. James.

Is there among ye that suffers? Let him pray.

Is there one that is sick? Let him call in the elders of the church that they may pray over him having anointed him in the name of the Lord.

These texts clearly indicate that pain and disease are to be regarded as realities, and not, as the Christian Scientists would have us believe, as mere figments in a perfect world. In the 1908 report of the Lambeth Conference Committee on healing, a committee on which the present Archbishop, then Bishop of Grahamstown, sat, it is stated:—

"We look forward confidently to an orderly movement towards the adjustment of these three aspects of the work of healing, physical science, psychology and religion."

Like the Church of Rome from time immemorial, all Christian churches have confessed their approval of healing by faith, but none has denied, as some Christian and non-Christian societies have denied, the efficacy of medicine. The Church of Rome has for many years worked in coöperation with medicine at Lourdes, and it is highly interesting to hear of the elaborate precautions taken by the medical committee to prevent open fraud. The Emmanuel movement too has been worked in partnership with medicine, and Dr. Elwood Worcester has stated repeatedly that—

"From the beginning we have associated ourselves with competent medical men and surgeons. Indeed, had such coöperation been refused I should not have dreamed of assuming responsibility for the sick in mind and body. For many years most of our patients have been sent us by physicians, and in all cases which involved more than the need of moral and spiritual advice we have left no stone unturned to procure the best diagnosis and medical care possible."

The attitude of the Church then may be said to be friendly towards medicine. What is our attitude towards these mysteries of faith-healing? There was a time when, through our ignorance and immodesty, it was blatantly antagonistic, and one can cite passages from the writings of men who were masters

of clinical medicine and yet illiberal and intolerant enough to condemn faith-healing as gross superstition and imposture. But the scientific attitude towards healing by faith is to-day exactly what it was in the time of Bacon, who in his "*Sylva Sylvarum*" has summarised it very clearly as follows:—

"The problem therefore is whether a man constantly and strongly believing that such a Thing shall be, as that he shall recover from a sickness, it doth help anything to the Effecting of the Thing itself. And here again we must warily distinguish. For it is not meant that it should help by making a man more stout or more industrious, in which kinde constant beleefe doth much, but merely by a secret operation or binding or Changing the Spirit of Another. And in this it is hard to make any new experiment. For I cannot command my Selfe to Beleefe what I will, and so no Triall can be made. Nay it is worse; For whatever a Man Imagineth doubtingly, or with fear, must needs do hurt, if Imagination have any power at all; For a Man representeth that oftener that he feareth than the contrary."

We have progressed since then. Bacon, learned as he was in philosophy, knew nothing about modern concepts such as the subconscious and the collective unconscious of Jung, of primordial images, of a rational explanation of mania, hysteria, or a simple skin rash. Yet our position is to-day very much the same as it was in his time when it comes to defining our attitude towards faith-healing. It is, and must remain, an attitude of tolerant scepticism, but it need not necessarily be one of opposition, antagonism, and enmity. It must be the same attitude that we take up when we are confronted with the claims of new methods of cure when these claims have not yet been proved—an attitude of perfect willingness to test the new methods, to apply them in selected cases, and to learn by experience how useful or useless they may ultimately prove.

I do not think that is an attitude to which laymen need take exception, but they may certainly call upon us to show that it is one which we adopt without prejudice. The proof should lie in our willingness to coöperate with the Church and to identify ourselves professionally much more actively with spiritual healing than we have yet done. My colleagues, with whom I sometimes discuss this subject, object that spiritual healing falls outside the sphere of our art because it conforms to no standard of scientific measurement. That objection is unsound, for, as I have already said, our art accepts many other things—empirical drugging for example—that cannot be scientifically defended. Another objection is that these unorthodox methods are as old as the human race, and if there is anything in them they should by this time have been proved to the satisfaction of everyone concerned. But our understanding of them has considerably improved within the past fifty years, and we are now in a position to test them far better than we were before. To shut our eyes to them, to deny that they do produce results, would be illogical, as well as foolish.

A PRACTICAL SCHEME IN BEING

So far as I know there is only one medical faculty that has tackled the problem in a practical way, and the results it has achieved are interesting. A year ago the University of Colorado instituted a psychiatric liaison service between its school of medicine and its department of psychology. The object of the scheme, as set forth in the official syllabus, is:—

To establish psychobiology as a scientific and integral working part of the professional thinking of physicians

and students of all branches of medicine; to make physicians and students aware of the opportunities offered them by every patient, no matter what complaint or ailment is present, for the utilisation of a commonsense psychiatric approach for the betterment of the patient's condition and making that patient better fitted to handle his problems; to instil in physicians and students the need the public has for a more tangible and practical conception of personality and sociological functioning, not so much in the sense of prevention of mental and personality disorders *per se* but rather in the sense of the prevention of false-thinking, misunderstanding, folklore and taboos that make it difficult for him to accept help or to allow the physician to be of help.

In six months' time this service is stated to have proved its usefulness. Nearly 20 per cent. of all patients on the medical side were referred from the out-patient department to the psychiatrist. In the hospital, 10 per cent. of all medical cases admitted, 3 per cent. of all surgical cases, 2 per cent. of all obstetrical cases, and 3 per cent. of all pædiatric cases were referred for what we may call "spiritual healing." Roughly 12 per cent. of all such referred patients showed evidence of organic disease. A medical journal, commenting on these statistics, writes:—

To date it is the consensus of opinion that this new project has done much to decrease patients' days in hospital and dispensary, and has through its psychobiological teaching only added more respect for the methods of the natural and basic sciences.

Here, then, we have a practical scheme, successfully tried, although necessarily on a limited scale. Its success is such that one is encouraged to hope that our own medical schools and universities might progress in the same direction, and institute something similar whereby the present gap between medicine and faith may be bridged.

THE PRICE OF COÖPERATION

But in return for coöperation from our side we must have knowledgeable coöperation from the public, from the Church, as well as from the laity.

Some years ago, when the Church organised the Hickson campaign of healing, there was a splendid opportunity for such helpful mutual assistance that might have led to tangible results. Unfortunately this was not enlisted, and although it may be true that goodwill it was given no opportunity of testing its sympathy, while the emotional surroun- dings of the mission were of such a nature that many of us were frankly repelled. I was at that time chief medical inspector in the Transvaal, and many parents came to the school clinic to ask my advice as to whether their children should be sent to the mission for treatment. We selected 24 children, half of whom were suffering from definite organic disease, and half of whom had some functional condition, or what was regarded as such. Of these two children were benefited; both were cases of migraine, and both relapsed a few weeks after the emotional exaltation of the service. One had died down. None of the others showed any signs of improvement, although six of them were later on much improved by ordinary medical treatment. I saw several children, certified as defective at birth, brought by their parents for exaltation, who were said to be cured. In none was there any definite improvement, except what could be ascribed to the emotional exaltation produced by the service. I feel sure that Mr. Hickson, whose charismatic gift was undoubtedly successful in healing many suffering from a proper medical committee, and whose cases, his success would have been greater if he had been assisted by a proper medical committee, and his success would have been greater if he had been assisted by a proper medical committee, and his success would have been greater if he had been assisted by a proper medical committee.

The public may give their coöperation by discouraging the quack and the charlatan, who by claiming to practise the art of healing without training and

ledge of its limitations exploit the public for his special benefit. There is no country in which quackery is more rampant than in South Africa, where the consumption of quack remedies is so high per head of white population; where the charges for quack treatment are enormous. We have all kinds of quackery, ranging from semi-scientific electrical treatments, that claim to diagnose and cure disease by oscillatory currents, to the pretentious cancer curer and the quack healer of the blind. There is probably no disease which to the lay mind connotes more suffering and agony than cancer. It is therefore natural and understandable that when the profession is as yet ridiculously handicapped in its fight against malignant disease, the sufferer should fly for salvation to the quack who promises cure. In South Africa, unfortunately, the cancer curer has a fertile field for exploitation.

So potent is the faith in these cancer quacks that the friends of a notorious exponent of the fraud petitioned the Cape Parliament, some years before Union, for permission for her to carry on her work without licence of the law, and succeeded in impressing our legislators to the extent that a select committee was appointed to investigate her method and alleged cures. The report of that select committee is a revelation to those who are unaware to what extent the public is imposed upon. There was no evidence that the method employed had cured or even alleviated cases of undoubted cancer, but the contrary it was shown that its employment had caused much pain and suffering to the victims. The alleged cures were cases of non-malignant disease which could more easily, expeditiously, and painlessly have been cured by other means.

Next to cancer, perhaps the greatest fear of the public is blindness. It is understandable that a patient feels that there is something wrong with his eyesight he should be attracted by the advertisements, usually speciously worded, of those who claim more than what medicine dares promise. In a manner in which the public is exploited by the sight-testing optician who advertises is so detrimental to the public welfare that again we as a profession should be neglectful of our duty if we failed to utter warning. To treat eye disease scientifically demands specialised knowledge. We have recognised that by insisting on special study for those who, as ophthalmic surgeons, are entrusted with the task of treating eye diseases and estimating the errors of refraction that demand, for their correction, the fitting of suitable glasses. Sight testing is not a mechanical job that can be effectively done with the aid of apparatus; to be well done it calls for a knowledge of medicine, an acquaintance with nervous and constitutional disease such as, under present conditions, only the trained ophthalmologist possesses. There are many of us who go about wearing spectacles that are unnecessary, or that are useless if necessary, because we forget that fact and have recourse to sight-testing opticians instead of to the ophthalmologist.

The popularity of eye exercises and the publicity given to the methods of eye-dealers whose first counsel is "wear your glasses" is easily explainable when we consider the fact that a large percentage of the spectacle-wearing public needs no glasses and would never have been compelled to wear them had it gone to the ophthalmologist for an opinion. Our considered advice to the public should be that when there is anything amiss with our eyes we should consult the ophthalmologist, and take his opinion to the optician. It is the function of the ophthalmologist to supply us with glasses, not to diagnose our conditions and treat them. When he presumes to do so he can only be partly effective, for he is not per-

mitted to use drugs, which are in some cases indispensably necessary for correct sight testing, and he encroaches upon a sphere of activity which the legislature, rightly or wrongly, has demarcated for medical men duly registered as such.

I have spoken about these two subjects, cancer curers and the vendor of glasses, because they emphasise the necessity to educate the public to distinguish between realities and apparent realities. Towards that education the efforts of all who are cultured should be directed, and the task must not be left to the medical profession, but there should be knowledgeable co-operation between the doctor and those whom in sickness he serves. By admitting that faith has a share in shaping our destinies and that the influence of the soul upon the functions of the body is something that our art should employ in its practice and methods of healing, we deny no canon of our teaching, though we may have to modify some of our views. In the matter of spiritual healing there is something more than probability; there is proof of a kind to be strengthened by further investigation such as can only be achieved by teamwork. The medical profession in this country, I feel sure, would welcome such team-work, and would do all in its power to make it effective by supplying not merely destructive criticism but constructive suggestion, clinical experience, and practical indications for the benefit of those who may be helped by spiritual healing.

MORE ABOUT THE SOYA BEAN

FOR 5000 years the soya bean has been the staple food of the inhabitants of Eastern China and their safeguard against famine. A small book¹ has now been published to show that it is possible and advisable to grow it in England. The bean contains 46 per cent. of protein and vitamins A, B, D, and E, and it is suggested that it would be the mainstay for feeding a country in time of war. The seed may be ground into flour which is used for diabetic, infant, and breakfast foods. The oil is employed in making butter and large substitutes and soap, while the juice becomes vegetable milk in condensed and powder forms, and also cheese. The range of by-products is almost incredible, the chief being cattle-feed, enamels and varnishes, rubber substitutes, linoleum, printing inks, celluloid, petroleum, explosives, glycerin, and some parts of motor-cars.

The nitrifying bacteria required by the soya bean are, it is stated, not present in English soil, but can be introduced artificially by inoculating the seed before it is sown. The bacteria, living within the nodules attached to the roots of the plants, draw in from the air large quantities of free nitrogen and convert it into nitrates for the nourishment of the plant: as the surrounding soil becomes infected inoculation of the seed may be discontinued. If phosphates, potash, and lime are present the bean will grow in sand or even cinders.

In 1932 Mr. Henry Ford failed to raise a soya crop at Boreham in Essex; but previously Mr. J. L. North, later curator of the Royal Botanic Gardens, had successfully cultivated the plant in the Thames Valley to the west of London after 18 years' experiment. Mr. Ford enlisted his services and a quantity of North's special acclimatised seed was sown from which good yields were harvested in 1933 and 1934. During these trials it became evident that the poorer types of soil suited the bean better than rich earth, which apparently weakened the plant's resistance to frost.

¹ Bowdidge, E.: *The Soya Bean: its History, Cultivation (in England), and Uses*. London: Humphrey Milford, Oxford University Press, 1935. Pp. 98. 6s.

AEROPHAGIA

A. R. Calatayud and E. L. Muñoz¹ in reporting a case of aerophagia point out the value of X ray examination in making a differential diagnosis, and describe the technique advised. The condition has to be distinguished (1) from physiological aerophagia, an increase in the amount of air with the food, which is seen in (2) from false aerophagia associated with the respiratory tract, &c., causing dyspnoea; (3) from oesophageal lesions; and (4) from the modifications in the amount of air present in the stomach in hypertonia and hypotonia. They describe the case of a man aged 60, with no past history or family history of importance, except for occasional bronchitis, who complained of discomfort and fullness after meals, mild epigastric pain, and eructations. He weighed 13½ st., and appeared excitable and neurotic. Pyorrhoea was present. The abdomen was rather distended. On X ray screening, the stomach was found to be orthotonic; motility was slightly diminished, and emptying was rather slow. Air could actually be seen entering the stomach by successive acts of swallowing. The air-space grew steadily larger until a fresh eructation partly emptied it, and the air swallowing then recommenced, in a constantly repeated cycle. The nature of his trouble was explained to the patient, and apparently he was able to control the habit, since it is reported that following general treatment and treatment for the pyorrhoea he was cured of the condition in about two months.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
WEDNESDAY, Jan. 1st.

Surgery, 8.30 P.M. Mr. G. H. Steele: Retrograde Oesophagoscopy. Dr. H. L. Marriott and Dr. A. Kelwick: Continuous Drip Blood Transfusion. Mr. C. Jennings Marshall: Treatment of Diverticulitis of the Colon.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

FRIDAY, Jan. 3rd.—5 P.M. (Mechanics Theatre, University College, Gower-street, W.C.). Dr. G. O. Barber: School Pressure in Work and Play.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

THURSDAY, Jan. 2nd, and FRIDAY.—Afternoon course in dermatology at St. John's Hospital, 5, Lisle-street, Leicester-square, W.C.

Appointments

COOLICAN, J. H., M.B. Dub., F.R.C.S. Irel., F.R.C.S. Edin., has been appointed Hon. Visiting Surgeon to the Mercers' Hospital, Dublin.

DOBBS, R. H., M.B. Camb., First Assistant in the Children's Department of University College Hospital.

DONOVAN, JOHN, M.B. Leeds, F.R.C.S. Edin., Resident Surgical Officer at the City Hospital, Nottingham.

EVANS, E. H., M.D., M.R.C.P. Lond., Resident Medical Officer at the City of London Maternity Hospital.

HARKNESS, ISABELLA, M.B. Glasg., D.P.H., Assistant Medical Officer for Maternity and Child Welfare for Nottingham.

JONES, D. J., M.B. Wales, D.P.H., Assistant County Medical Officer of Health for Warwickshire.

KINBELL, C. W., M.B., Assistant Resident Medical Officer at the City of London Maternity Hospital.

LIVINGSTONE, GAVIN, M.B. Lond., F.R.C.S. Eng., to the Metropolitan Hospital.

MELROSE, M. M., M.R.C.S. Eng., Hon. Paed. Herefordshire General Hospital.

MILLS, C. T., M.B. Manch., Hon. Anaesthetist to the Infirmary, Worcester.

MORLAND, ANDREW, M.D., M.R.C.P. Lond., Physic. patients to the Hôpital et Dispensaire Français, D.

PATRICK, L. B., M.B., F.R.C.S. Edin., M.C.O.G., A. Hon. Surgeon to the Jessop Hospital for Women, S.

PERROT, H. S., M.B. Dub., Hon. Anaesthetist to the H. shire General Hospital.

SMITH, E. R., M.D. Liverp., D.P.H., Deputy Medical Officer and Deputy School Medical Officer for S.

WILLMOTT, B. M., M.B. Camb., F.R.C.S. Eng., Hon. Surgeon to the Birmingham Maternity Hospital.

WINDEYER, B. W., M.B., F.R.C.S. Edin., D.M.R.E., Officer in Charge of the Department of Radiology at the Middlesex Hospital.

Royal Free Hospital.—The following appointments announced:—

POWYS, M., M.B. Lond., District Obstetric Assistant.

STEWART, A. M., M.D., Medical Registrar.

WHITE, M. MOORE, M.B. Lond., F.R.C.S. Eng., Logical Registrar.

BECK, D. J. KINLOCH, F.R.C.S., Surgical Registrar.

Certifying Surgeon under the Factory and Workshop Dr. P. C. PARR (Marlow District, Buckingham).

Vacancies

For further information refer to the advertisement in Banbury, Horton General Hospital.—Res. M.O. At £150.

Bath, Royal United Hospital.—Hon. Anaesthetist.

Birmingham City Mental Hospital.—Jn. Asst. M.O.

Birmingham, Royal Cripples Hospital.—Res. H.S. of £200.

Brighton Municipal Hospital.—Third Res. Asst. M.O.

Cambridge, Addenbrooke's Hospital.—H.S. At rate of £125.

Canterbury, Kent and Canterbury Hospital.—Two H.S. at rate of £125.

Capetown, Cape Hospital Board.—Radiologist. £1250.

Croydon General Hospital.—Hon. Neu. logist. Also Hon. Physician.

Dorchester, Dorset County Hospital.—H.S. At rate of £350.

Durham County Mental Hospital.—Asst. M.O. £350.

Eastbourne, Princess Alice Memorial.—Res. H.S. £150.

Edinburgh, Gilbert Bain Memorial Hospital, Lerwick.—and Consultant. £700.

Enfield Education Committee.—School Dental Surgeon.

Glasgow, Royal Faculty of Physicians and Surgeons.—Fell Examination.

Glasgow Royal Mental Hospital, Gt. travel.—Asst. Ph. £300.

Halifax Hospital for Infectious Disen. —Res. M.O. £300.

Hampshire County Council.—Asst. County M.O. £800.

Hospital for Consumption and Diseases of the Chest, Bro. S.W.—H.P. At rate of £50.

Hull Royal Infirmary.—Cas. O. At rate of £150.

Ilford Council Maternity Home.—Res. M.O. £350.

London Jewish Hospital, Stepney Green, E.—Out-patient £125.

London University.—Readership in Surgery. £800-£1000.

Manchester, Ancoats Hospital.—Res. Surg. O. £200.

Med. Reg. £50.

Manchester Royal Children's Hospital, Pendlebury.—Res. At rate of £125.

Middlesex County Council.—Tuber. M.O. £750.

Newcastle-upon-Tyne, Hospital for Sick Children.—Res. £250. Also H.P. and H.S. Each at rate of £100.

Nottingham General Hospital.—H.S. At rate of £150.

Rochdale Infirmary and Dispensary.—Sen. H.S. £250.

Rochester, St. Bartholomew's Hospital.—Cas. and Orthop. At rate of £175.

St. John's Hospital, Lewisham, SE.—Clin. Asst. to Elec. and Massage Dept.

St. Paul's Hospital, Endell-street, Colborn, W.C.—H.S. of £150.

Trans-Jordan.—M.O. £650.

Walsall General Hospital.—H.S. At rate of £150.

Warrington, County Mental Hospital, Winwick.—Asst. £500.

West Ham County Borough.—Radiologist. £250.

West Sussex County Council.—Asst. Tub. O. and £750.

¹ Rev. Española de las enfermedades del aparato digestivo y de la nutrición 1935, i, 599.

